SUPER®

SUPER® X7SB3
SUPER® X7SB3-F

USER'S MANUAL

Revision 1.0b

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Preface

About This Manual

This manual is written for system integrators, PC technicians and knowledgeable PC users. It provides information for the installation and use of the SUPERO® X7SB3/X7SB3-F motherboard.

About This Motherboard

The SUPERO® X7SB3/X7SB3-F supports single Intel® Xeon® Quad-Core/Dual-Core 3000 Sequence/Core™ 2 processor with a front side bus speed of 1333/1066/800 MHz. The Intel® Xeon®3000 Sequence/Core™2 processor supports the 775-Land Grid Array Package that interfaces with the motherboard via an LGA775 socket. With support of the Intel® Virtualization Technology, and Thermal Management 2 (TM2), the X7SB3/X7SB3-F delivers outstanding performance and great power efficiency, ideal for small High-Performance Cluster (HPC) server platforms. Please refer to the motherboard specifications pages on our web site (http://www.supermicro.com/products/motherboard/) for the most recent updates. This product is intended to be professionally installed and serviced by a technician.

Manual Organization

Chapter 1 introduces the motherboard, providing information on the layout, connectors/jumpers, features, specifications and the chipset.

Chapter 2 provides hardware installation instructions. Read this chapter when installing the processor, memory modules and other hardware components into the system.

Chapter 3 includes an introduction to the BIOS and provides detailed information on running the CMOS Setup utility.

If you encounter any problems, see **Chapter 4**, which describes troubleshooting procedures for the video, the memory and the system setup stored in the CMOS.

Appendix A lists BIOS POST Error Codes. **Appendix B** and **Appendix C** provide the Windows OS and other software programs installation instructions.

Conventions Used in the Manual

Special attention should be given to the following symbols for proper installation and to prevent damage done to the components or injury to yourself.

Warning: Important information given to ensure proper system installation or to prevent damage to the components.

Note: Additional Information given to differentiate various models or to ensure correct system setup.

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Appendix A BIOS POST Error Codes

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Chapter 1

Introduction

1-1 Overview

Checklist

Congratulations on purchasing your computer motherboard from an acknowledged leader in the industry. Supermicro boards are designed with the utmost attention to detail to provide you with the highest standards in quality and performance. Check that the following items have all been included with your motherboard. If anything listed here is damaged or missing, contact your retailer.

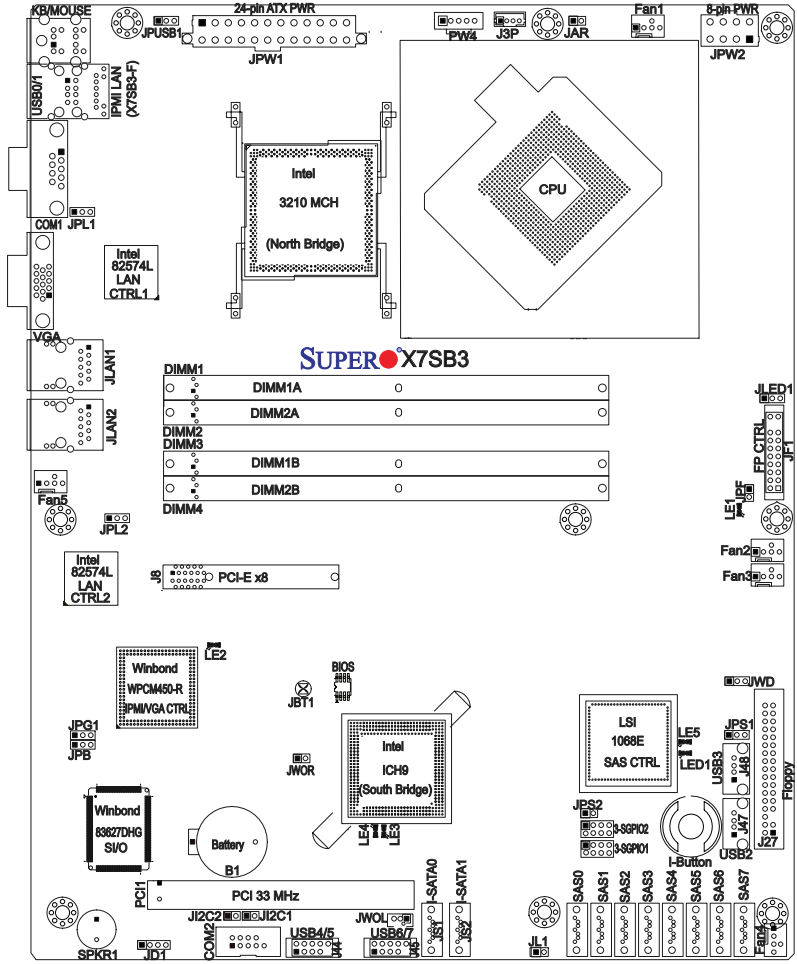
All the following items are included in the retail box.

- One (1) Supermicro Mainboard
- One (1) floppy cable (CBL-0022L)
- Six (6) SATA cables (CBL-0044L)
- One (1) I/O shield (MCP-260-00027- 0N)
- One (1) Supermicro CD containing drivers and utilities
- One (1) User's/BIOS Manual (MNL-1038)

SUPERO X7SB3-F Motherboard Image

Note: The drawings and pictures shown in this manual were based on the latest PCB Revision available at the time of publishing of the manual. The motherboard you've received may or may not look exactly the same as the graphics shown in the manual.

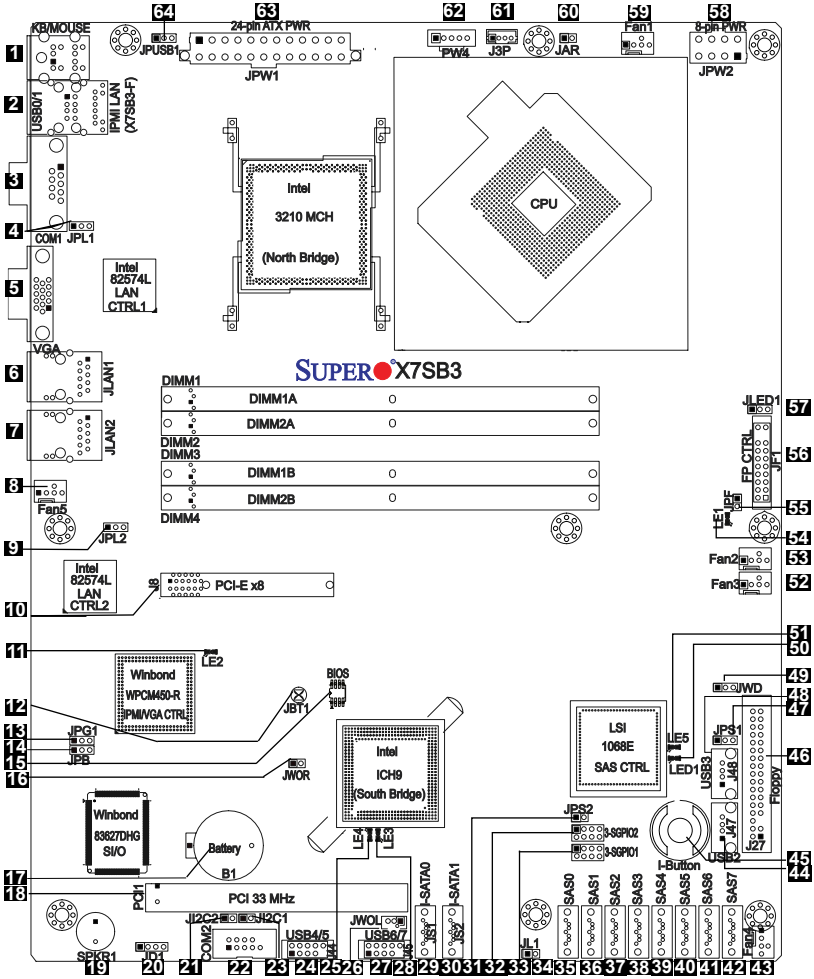
SUPER® X7SB3/X7SB3-F Motherboard Layout



Notes:

- Jumpers not indicated are for test purposes only.
- See Chapter 2 for detailed information on jumpers, I/O ports and JF1 front panel connections.
- "▪" indicates the location of Pin 1.
- IPMI support, the IPMI-dedicated LAN, the Realtek PHY chip, and IPMI Heartbeat LEDs are available on the full-featured X7SB3-F board only.

X7SB3/X7SB3-F Quick Reference



Jumper	Label	Description	Default Setting
JBT1	12	CMOS Clear	(See Chapter 2)
JI²C1/JI²C2	21/23	SMB to PCI slots Enable	Off (Disabled)
JPF	55	Power Force-On	Off (Normal)
JPG1	13	(BMC) VGA Enable	Pins 1-2 (Enabled)
JPL1/JPL2	4/9	LAN1/2 Enable/Disable	Pins 1-2 (Enabled)
JPS1	47	SAS Enable/Disable	Pins 1-2 (Enabled)
JPS2	31	SAS ID/RAID Mode Select	Closed (Software RAID)
JPUSB1	64	BP USB Wake-up Enable	Pins 1-2 (Enabled)
JWD	49	Watch Dog	Pins 1-2 (Reset)

Connector	Label	Description
B1	17	Onboard Battery
BIOS Chip	15	Phoenix SPI BIOS Chip
COM1/COM2	3/22	COM1/COM2 Serial Port/Header
Fans 1~5	Fan1:59,Fan2: 53, Fan3:52,Fan4: 43, Fan5: 8	Fans 1~5: Chassis/CPU/System Fans
Floppy	46	Floppy Drive Connector
I-Button	45	I-Button Socket
J3P (Optional)	61	Redundant PWR Fail Detect (for internal use)
IPMI LAN	2	Dedicated LAN for IPMI (X7SB3-F only)
JAR	60	Alarm Reset
JD1	20	Onboard Speaker Header (Pins 3~4: Internal Buzzer, Pins 1~4: External Speaker)
JF1	56	Front Panel Control Connector
JL1	34	Chassis Intrusion Header
JLAN 1~2	6/7	Gigabit Ethernet (RJ45) Ports
JLED1	57	Onboard Power LED
JPW1	63	ATX Main Power Connector
JPW2	58	12V 8-Pin Auxiliary PWR Connector
JWOL	26	Wake-On-LAN Header
JWOR	16	Wake-On-Ring Header
KB/MS	1	PS/2 Keyboard/Mouse
PW4 (X7SB3-F)	62	Power Supply SMB (I^2C) Connector
SAS 0~7	35~42	Serial_Attached SCSI Connectors
(I-)SATA 0/1	29/30	(Intel South Bridge) Serial_ATA Ports 0~1
(3-)SGPIO 1/2	32/33	Serial-Link General Purpose I/O Headers
SPKR1	19	Internal Buzzer/Speaker
USB 0/1	2	Back Panel USB Ports#0~1
USB 2,USB 3	44/48	Front Panel Accessible USB Connectors 2~3
USB 4~5, 6~7	24/27	Front Panel USB Ports 4~5, 6~7
VGA	5	VGA Connector

LED	Label	Description	Status
LE1	54	Onboard Standby Power LED	Green: On (PWR On)
LE2	12	IPMI Heartbeat LED (X7SB3-F)	Green: Blinking (IPMI Ready)
LE3/LE4	28/25	BIOS POST Codes LED	(Reserved for Internal Use)
LE5	51	SAS Heartbeat LED	Yellow: Blinking (SAS Ready)
LED1	50	SAS Activity LED	Green: Blinking (SAS Active)

Note: Jumper JPB (14) is used for factory debug puposes only.

Motherboard Features

CPU

- Single Intel® Xeon® LGA 775 Quad-Core/Dual-Core 3000 Sequence or Core™ 2 processor at a front side bus speed of 1333/1066/800 MHz

Memory

- Four 240-pin DIMM sockets with support of up to 8 GB ECC/Non-ECC Unbuffered DDR2 800/667 MHz Memory with DIMM size of 2 GB/1 GB/512 MB/256 MB @ 1.8V (See Section 2-4 in Chapter 2 for DIMM Slot Population.)

Chipset

- Intel® 3210 chipset, including: the 3210 Memory Control Hub (MCH), and the ICH9 South Bridge

Expansion Slots

- One PCI-E x8 slot (J8) (Not for a graphics card)
- One PCI 33MHz slot (PCI1)

BIOS

- 16 Mb Phoenix® SPI Flash EEPROM
- DMI 2.3, PCI 2.2, APM 1.2, ACPI 1.0/2.0/3.0, Plug and Play (PnP), USB Keyboard support, and SMBIOS 2.3

PC Health Monitoring

- Onboard voltage monitors for CPU cores, Memory, Chipset, +1.8V, +3.3V, +5V, +12V, –12V, +3.3V standby, Vcore and VBAT
- Fan status monitor with firmware control
- CPU/chassis temperature monitors
- CPU 4-phase switching voltage regulator
- CPU slow-down on temperature overheat
- CPU thermal trip support for processor protection
- Thermal Monitor 2 (TM2) support
- CPU fan auto-off in sleep mode
- PECI Ready (Platform Environment Control Interface)
- Low noise fan speed control
- Fan status monitor for on-off control
- Pulse Width Modulation (PWM) fan control
- Tachometer monitoring
- Power-up mode control for recovery from AC power loss
- Chassis intrusion detection

- System resource alert via Supero Doctor III

ACPI Features

- Slow blinking LED for suspend state indicator
- Main switch override mechanism
- ACPI Power Management
- Power-on mode for power recovery

Onboard I/O

- Two SATA ports
- Two Intel 82574L LAN chips support two Giga-bit LAN ports
- Additional IPMI-dedicated LAN supported by the Realtek RTL8201N Ethernet Controller (X7SB3-F only)
- One floppy port interface supports 1.44 MB
- Two COM ports(1 header, 1 port) supports Fast UART 16550 connection
- Up to eight USB 2.0 (Universal Serial Bus) (two backpanel connectors, two front panel internal ports, and two Type A connectors)
- Super I/O: Winbond W83627DHG
- Winbond WPCM450-R Controller supports VGA and IPMI interface connections (IPMI interface: X7SB3-F only)

Other

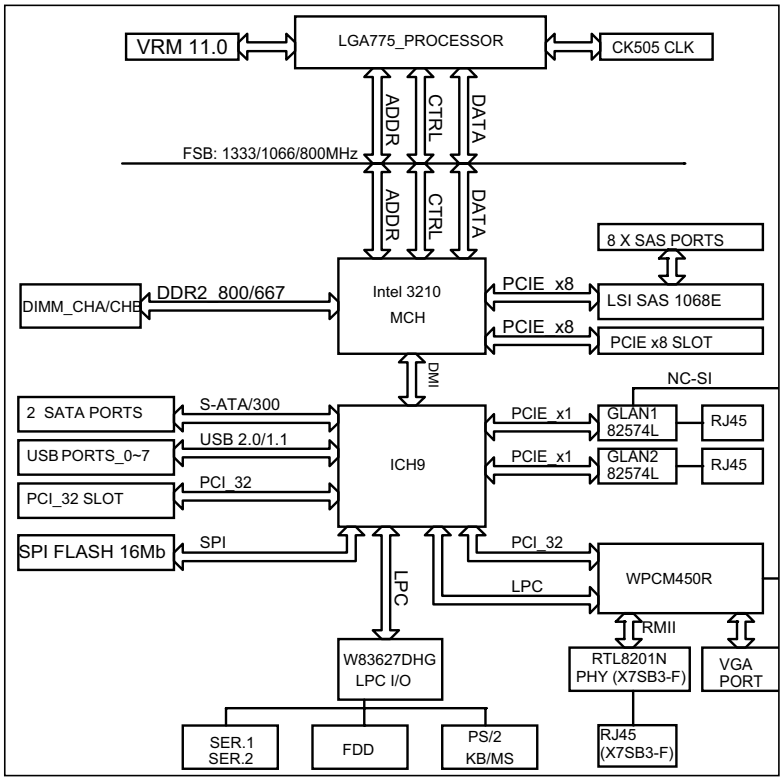
- External modem ring-on
- Wake-on-LAN (WOL)
- Wake-on-Ring (WOR)
- Console redirection
- Onboard Fan Speed Control by Thermal Management via BIOS

CD/Diskette Utilities

- Device drivers

Dimensions

- ATX 12.0" (L) x 9.6" (W) (304.8 mm x 243.8 mm)



X7SB3/X7SB3-F Block Diagram

Note: This is a general block diagram. Please see the Motherboard Features pages for details on the features of each motherboard.

1-2 Chipset Overview

The Intel 3210 chipset is comprised of two primary components: the Memory Controller Hub (MCH) and the I/O Controller Hub (ICH9). The X7SB3/X7SB3-F provides the performance and feature-set required for the mainstream high-performance cluster platform (HPC) market.

Intel 3210 Memory Controller Hub (MCH)

The function of the MCH is to manage the data flow between four interfaces: the CPU interface, the DDR2 System Memory interface, the PCI Express interface, and the Direct Media Interface (DMI). The MCH is optimized for the Intel® Xeon® 3000 Sequence processor in the LGA775 Land Grid Array package. It supports one or two channels of DDR2 SDRAM.

Intel ICH9 System Features

The I/O Controller (ICH9) provides the data buffering and interface arbitration required for the system to operate efficiently. It also provides the bandwidth needed for the system to maintain its peak performance. The Direct Media Interface (DMI) provides the connection between the MCH and the ICH9. The ICH9 supports two PCI-Express devices, two Serial ATA ports, and up to eight USB 2.0 ports/headers. It also supports the next generation of client management through the use of PROActive technology in conjunction with Intel's next generation Gigabit Ethernet controller. Functions and capabilities include:

- Advanced Configuration and Power Interface, Version 2.0 (ACPI)
- Power SMBus
- I^2C
- SST/PECI for Speed Control
- SPI Flash BIOS
- Low Pin Count (LPC) Interface

Note: For more information on the ICH9, please refer to Intel's web site at www.intel.com.

1-3 Special Features

Recovery from AC Power Loss

BIOS provides a setting for you to determine how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must hit the power switch to turn it back on) or for it to automatically return to a power- on state. See the Power Lost Control setting in the Advanced BIOS Setup section to change this setting. The default setting is **Last State**.

1-4 PC Health Monitoring

This section describes the PC health monitoring features of the X7SB3/X7SB3-F. All have an onboard System Hardware Monitor chip that supports PC health monitoring.

Voltage Monitoring

An onboard voltage monitor will scan the CPU Core, Chipset, +1.8V, +3.3V, +5V, +12V, -12V, +3.3V Standby, +5V Standby and VBAT voltages continuously. Once a voltage becomes unstable, a warning is given or an error message is sent to the screen. Users can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

Fan Status Monitor with Firmware Control

The PC health monitor can check the RPM status of the cooling fans. The onboard CPU and chassis fans are controlled by Thermal Management via BIOS (under Hardware Monitoring in the Advanced Setting).

Environmental Temperature Control

The thermal control sensor monitors the CPU temperature in real time and will turn on the thermal control fan whenever the CPU temperature exceeds a user-defined threshold. The overheat circuitry runs independently from the CPU. Once it detects that the CPU temperature is too high, it will automatically turn on the thermal fan control to prevent any overheat damage to the CPU. The onboard chassis thermal circuitry can monitor the overall system temperature and alert users when the chassis temperature is too high.

CPU Overheat LED and Control

This feature is available when the user enables the CPU overheat warning function in the BIOS. This allows the user to define an overheat temperature. When the CPU temperature reaches the pre-defined overheat threshold, both the overheat fan and the warning LED are triggered.

System Resource Alert

This feature is available when used with Supero Doctor III in the Windows OS environment or used with Supero Doctor II in Linux. Supero Doctor is used to notify the user of certain system events. For example, if the system is running low on virtual memory and there is insufficient hard drive space for saving the data, you can be alerted of the potential problem. You can also configure Supero Doctor to provide you with warnings when the system temperature goes beyond a pre-defined range.

1-5 ACPI Features

ACPI stands for Advanced Configuration and Power Interface. The ACPI specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a PC system, including its hardware, operating system and application software. This enables the system to automatically turn on and off peripherals such as CD-ROMs, network cards, hard disk drives and printers. This also includes consumer devices connected to the PC such as VCRs, TVs, telephones and stereos.

In addition to enabling operating system-directed power management, ACPI provides a generic system event mechanism for Plug and Play and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures while providing a processor architecture-independent implementation that is compatible with Windows 2000, Windows XP and Windows 2003 Servers.

Slow Blinking LED for Suspend-State Indicator

When the CPU goes into a suspend state, the chassis power LED will start blinking to indicate that the CPU is in suspend mode. When the user presses any key, the CPU will wake-up and the LED will automatically stop blinking and remain on.

Main Switch Override Mechanism

When an ATX power supply is used, the power button can function as a system suspend button to make the system enter a SoftOff state. The monitor will be suspended and the hard drive will spin down. Pressing the power button again will cause the whole system to wake-up. During the SoftOff state, the ATX power supply provides power to keep the required circuitry in the system alive. In case the system malfunctions and you want to turn off the power, just press and hold the power button for 4 seconds. This option can be set in the Power section of the BIOS Setup routine.

External Modem Ring-On

Wake-up events can be triggered by a device such as the external modem ringing when the system is in the Standby or Off state. The external modem ring-on can only be used with an ATX 2.01 (or above) compliant power supply.

Wake-On-LAN is defined as the ability of a management application to remotely power up a computer that is powered off. Remote PC setup, up-dates and asset tracking can occur after hours and on weekends so that daily LAN traffic is kept to a minimum and users are not interrupted. The motherboard has a 3-pin header (WOL) to connect to the 3-pin header on a Network Interface Card (NIC) that has WOL capability. In addition, an onboard LAN controller can also support WOL without any connection to the WOL header. The 3-pin WOL header is to be used with a LAN add-on card only.

Note: Wake-On-LAN requires an ATX 2.01 (or above) compliant power supply.

1-6 Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for processors that have high CPU clock rates.

The X7SB3/X7SB3-F can only accommodate 24-pin ATX power supply. Although most power supplies generally meet the specifications required by the motherboard, some are inadequate. You should use one that will supply at least 400W of power. In addition, the 12V 8-pin is also required for adequate power supply to the CPU. Also your power supply must supply 1.5A for the Ethernet ports.

It is strongly recommended that you use a high quality power supply that meets ATX power supply Specification 2.02 or above. It must also be SSI compliant (info at http://www.ssiforum.org/). Additionally, in areas where noisy power transmission is present, you may choose to install a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

1-7 Super I/O

The disk drive adapter functions of the Super I/O chip include a floppy disk drive controller that is compatible with industry standard 82077/765, a data separator, write pre-compensation circuitry, decode logic, data rate selection, a clock generator, drive interface control logic and interrupt and DMA logic. The wide range of functions integrated onto the Super I/O greatly reduces the number of components required for interfacing with floppy disk drives. The Super I/O supports 360 K, 720 K, 1.2 M, 1.44 M or 2.88 M disk drives and data transfer rates of 250 Kb/s, 500 Kb/s or 1 Mb/s. It also provides two high-speed, 16550 compatible serial communication ports (UARTs). Both UARTs provide legacy speed with baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support higher speed modems.

The Super I/O provides functions that comply with ACPI (Advanced Configuration and Power Interface), which includes support of legacy and ACPI power management through an SMI or SCI function pin. It also features auto power management to reduce power consumption.

1-8 Overview of the Winbond WPCM450 Controller

The Winbond WPCM450 Controller is a Baseboard Management Controller (BMC) that supports the 2D/VGA-compatible Graphics Core with the PCI interface, Virtual Media, and Keyboard/Video/Mouse Redirection (KVMR) modules. With blade-oriented Super I/O capability built-in, the WPCM450 Controller is ideal for legacy-reduced server platforms.

The WPCM450 interfaces with the host system via a PCI interface to communicate with the Graphics core. It supports USB 2.0 and 1.1 for remote keyboard/mouse/virtual media emulation. It also provides LPC interface to control Super IO functions. The WPCM450 is connected to the network via an external Ethernet Phy module.

The WPCM450 communicates with onboard components via six SMBus interfaces, fan control, Platform Environment Control Interface (PECI) buses, and General Purpose I/O (3SGPIO) ports.

The WPCM450 also includes the following features:

- One X-Bus parallel interface for expansion I/O connections
- Three ADC inputs, Analog and Digital Video outputs
- Two serial for boundary scan and debug

Notes

Chapter 2

Installation

2-1 Static-Sensitive Devices

Electro-Static-Discharge (ESD) can damage electronic components. To prevent damage to your system board, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.
- Use only the correct type of onboard CMOS battery as specified by the manufacturer. Do not install the onboard battery upside down to avoid possible explosion.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

2-2 Mounting the Motherboard in the Chassis

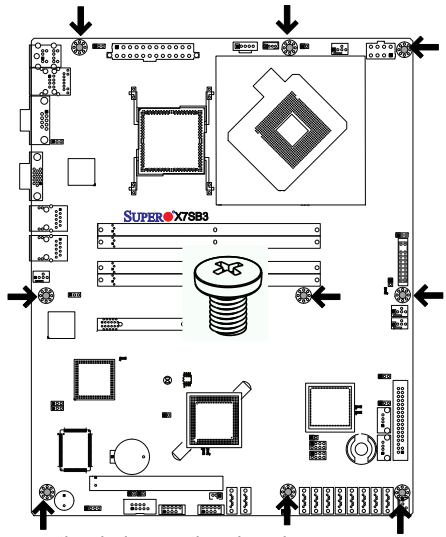
For proper installation, please follow the instructions below to mount the motherboard into the chassis before installing the CPU on the motherboard.

Tools needed

- Phillips screwdriver
- #6 32 x5mm pan head screw as shown below.

Installation Procedures

- Locate the mounting holes on the motherboard. Refer to the layout below for the locations of the mounting holes. (The holes marked with arrows are the mounting holes on this motherboard.)



- Locate the mounting holes on the chassis.
- Align the mounting holes on the motherboard against the mounting holes on the chassis.
- Insert a #6 pan head screw into a pair of mounting holes on the motherboard and on the chassis.
- Using a Phillips screwdriver, tighten the screw. Make sure that the standoffs on the chassis click in or are screwed in tightly.

- Repeat the step above until the motherboard is securely installed into the chassis.

Notes

1. All motherboards have standard mounting holes to fit different types of chassis. Make sure that the locations of all the mounting holes for both motherboard and chassis match.

2. Some components are very close to the mounting holes. Please take precautionary measures to avoid damaging the components when installing the motherboard into the chassis.

2-3 Installing the Processor and Heatsink Fans

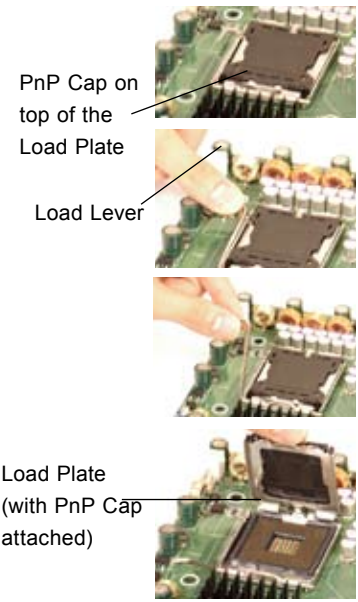
Warning: When handling the processor package, avoid placing direct pressure on the label area of the fan.

Notes:

1. Always connect the power cord last and always remove it before adding, removing or changing any components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.
2. Intel's boxed Xeon® CPU package contains the CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel-certified multi-directional heatsink and fan.
3. Make sure to install the motherboard into the chassis before you install the CPU heatsink and fan.
4. When purchasing a motherboard with an LGA 775 CPU Socket, make sure that the CPU plastic cap is in place, and none of the CPU Socket pins are bent; otherwise, contact the retailer immediately.
5. Refer to the Chipset/MB Features Section for more details on CPU support.

Installing the LGA775 Processor

1. Press the load lever to release the load plate, which covers the CPU socket, from its locking position.
2. Gently lift the load lever to open the load plate.
3. Use your thumb and your index finger to hold the CPU at the North Center Edge and the South Center Edge of the CPU.



Loading the Processor into the Socket

1. Align CPU Pin1 (the CPU corner marked with a triangle) against the socket corner that is marked with a triangle cutout.

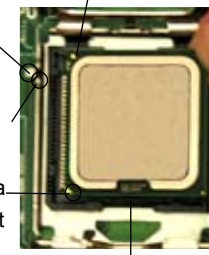
2. Align the CPU key that is the semi-circle cutout below a gold dot against the socket key, the notch on the same side of the triangle cutout on the socket.

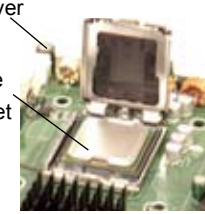
3. Once aligned, carefully lower the CPU straight down to the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically. Do not rub the CPU against the surface or against any pins of the socket to avoid damage to the CPU or the socket.)

4. With the CPU installed in the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed. Then, close the load plate.

5. Use your thumb to gently push the load lever down to lock it.

6. If the CPU is properly installed into the socket, the plastic cap will be automatically released from the load plate when the clip is pushed in the clip lock. Remove the plastic cap from the motherboard.





Warning: Please save the plastic PnP cap. The motherboard must be shipped with the PnP cap properly installed to protect the CPU socket pins. Shipment without the PnP cap properly installed will cause damage to the socket pins.

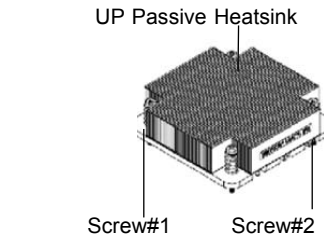
Installing the Heatsink

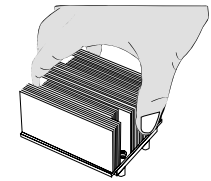
1. Do not apply any thermal grease to the heatsink or the CPU die; the required amount has already been applied.

2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the retention mechanism.

3. Screw in two diagonal screws (ie the #1 and the #2 screws) until just snug (-do not fully tighten the screws to avoid possible damage to the CPU.)

4. Finish the installation by fully tightening all four screws.

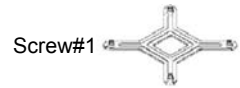




Removing the Heatsink

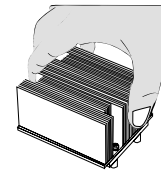
Warning: We do not recommend that the CPU or the heatsink be removed. However, if you do need to uninstall the heatsink, please follow the instructions on the next page to uninstall the heatsink to prevent damage done to the CPU or the CPU socket.

1. Unscrew and remove the heatsink screws from the motherboard in the sequence as shown in the picture on the right.



2. Hold the heatsink as shown in the picture on the right and gently wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink!!)

3. Once the heatsink is loosened, remove the heatsink from the CPU socket.



4. Clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease on the surface before you re-install the CPU and the heatsink.

2-4 Installing DIMMs

CAUTION

Exercise extreme care when installing or removing DIMM modules to prevent any possible damage. Also note that the memory is interleaved to improve performance..

DIMM Installation

1. Insert the desired number of DIMMs into the memory slots, starting with DIMM #1A, #1B, then #2A and #2B.
2. Insert each DIMM module vertically into its slot. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM module incorrectly.
3. This motherboard supports both dual-rank and single-rank memory modules. For system memory to work properly, please use all dual-rank memory modules or use all single-rank memory modules on the same motherboard. Check the Supermicro web site for other information.

Memory Support

The X7SB3/X7SB3-F supports up to 8 GB Unbuffered ECC/Non-ECC DDR2 800/667 MHz in 4 DIMMs. Populating memory slots of the same bank with a pair (or pairs) of memory modules of the same size and same type **will result in two-way Interleaved Memory** which will improve memory performance. (See the table below.)

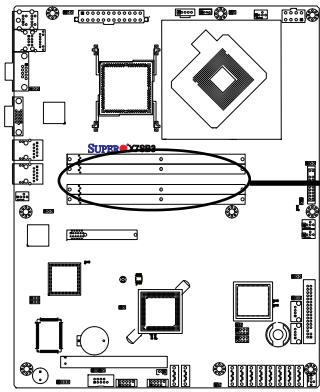
Optimized DIMM Population Configurations				
No. of DIMMs	**Channel 0**		**Channel 1**	
2 DIMMs	DIMM#1A	------	DIMM#1B	------
4 DIMMs	DIMM#1A	DIMM#2A	DIMM#1B	DIMM#2B
(**Notes: i.** DIMM slot# specified: DIMM slot to be populated; "---": DIMM slot not to be populated. **ii.** DDR2 ECC/Non-ECC Unbuffered 800 MHz/667 MHz DIMMs are supported; however, please use the memory modules of the same speed and of the same type on a motherboard. **iii.** For memory to work properly, you need to follow the restrictions listed above.)				

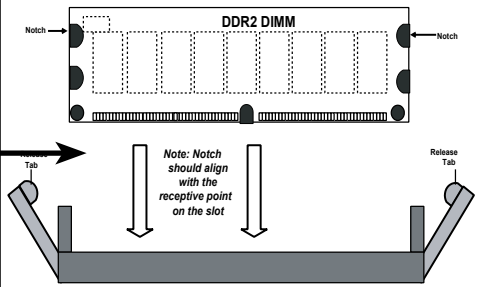
Note 1: Due to OS limitations, some operating systems may not show more than 4 GB of memory.

Note 2: Due to memory allocation to system devices, memory remaining available for operational use will be reduced when 4 GB of RAM is used.

Possible System Memory Allocation & Availability		
System Device	Size	Physical Memory Remaining (-Available) (4 GB Total System Memory)
Firmware Hub flash memory (System BIOS)	1 MB	3.99
Local APIC	4 KB	3.99
Area Reserved for the chipset	2 MB	3.99
I/O APIC (4 Kbytes)	4 KB	3.99
PCI Enumeration Area 1	256 MB	3.76
PCI Express (256 MB)	256 MB	3.51
PCI Enumeration Area 2 (if needed) -Aligned on 256-MB boundary-	512 MB	3.01
VGA Memory	16 MB	2.85
TSEG	1 MB	2.84
Memory available to OS and other applications		2.84

Installing and Removing DIMMs



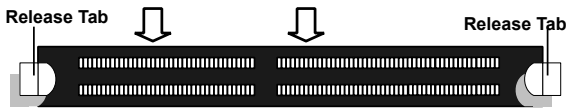


To Install: Insert module vertically and press down until it snaps into place. Pay attention to the alignment notch at the bottom.

To Remove:

Use your thumbs to gently push the release tabs near both ends of the module to release it from the slot.

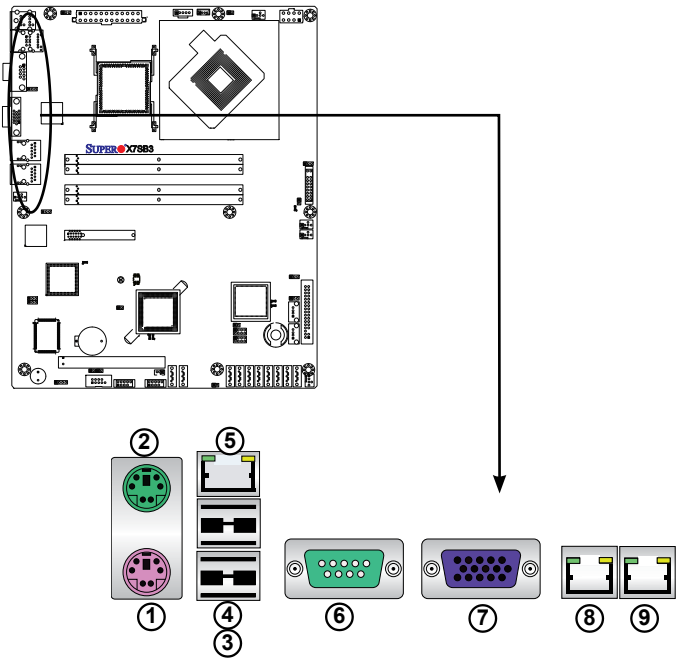
Top View of DDR2 ECC Slot



2-5 Control Panel Connectors/IO Ports

The I/O ports are color coded in conformance with the PC 99 specification. See the graphics below for the colors and locations of the various I/O ports.

Back Panel Connectors/IO Ports



Back Panel I/O Port Locations and Definitions

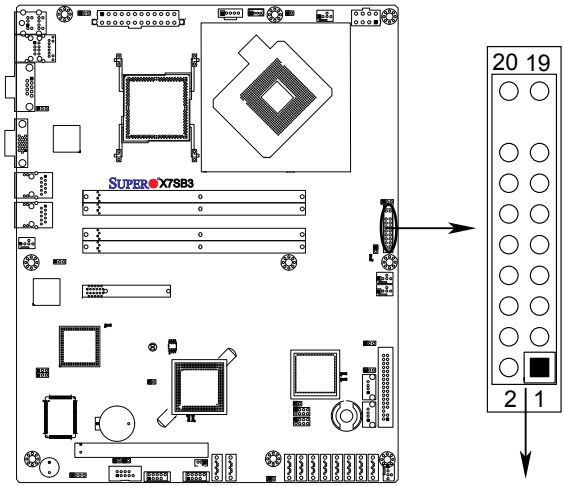
	Back Panel Connectors
1	Keyboard (Purple)
2	PS/2Mouse (Green)
3	USB 0
4	USB 1
5	IPMI LAN (X7SB3-F only)
6	COM 1 (Turquoise)
7	VGA (Blue)
8	LAN 1
9	LAN 2

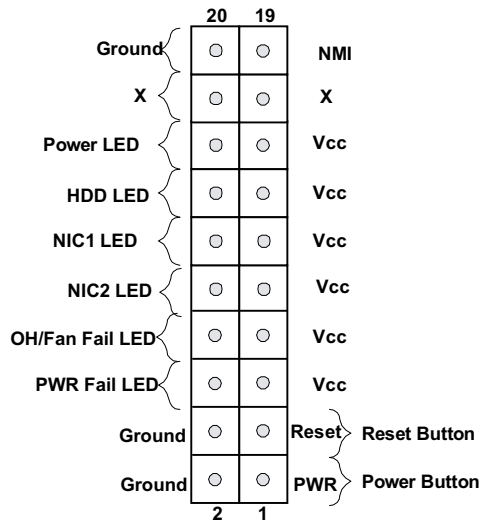
(See Section 2-6 for details.)

Front Control Panel

JF1 contains header pins for various buttons and indicators that are normally located on a control panel at the front of the chassis. These connectors are designed specifically for use with Supermicro server chassis. See the figure below for the descriptions of the various control panel buttons and LED indicators. Refer to the following section for descriptions and pin definitions.

Front Control Panel Header (JF1) Pins





Front Control Panel Pin Definitions

NMI Button

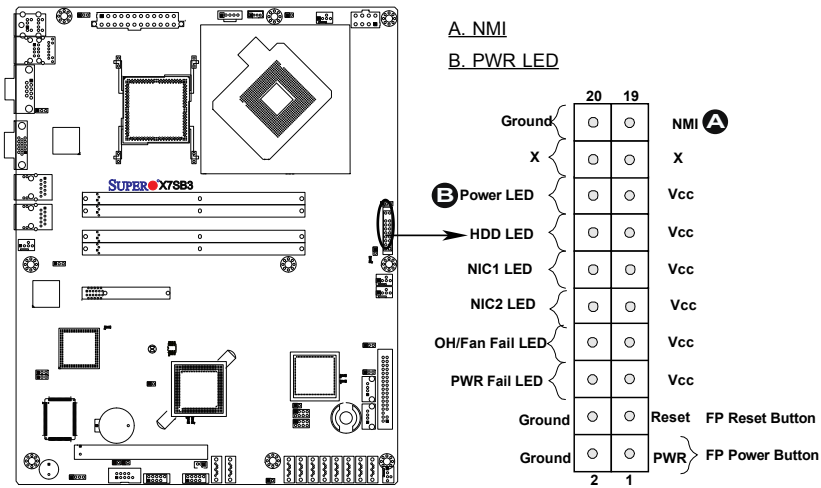
The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

NMI Button Pin Definitions (JF1)	
Pin#	Definition
19	Control
20	Ground

Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	Vcc
16	Ground



HDD LED

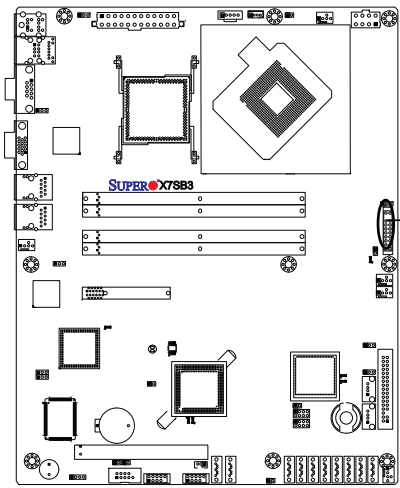
The HDD LED connection is located on pin 14 of JF1. Attach a hard-drive LED cable here to display disk activity. See the table on the right for pin definitions.

HDD/UID LED Pin Definitions (JF1)	
Pin#	Definition
13	Vcc
14	HD Active

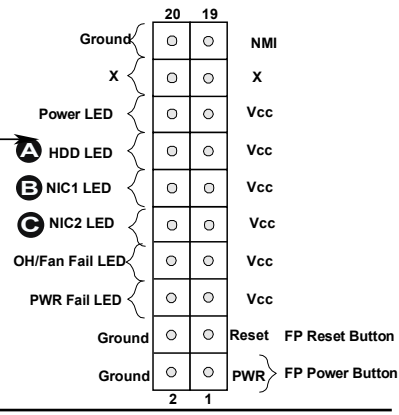
NIC1/NIC2 LED Indicators

The NIC (Network Interface Controller) LED connection for GLAN port1 is located on pins 11 and 12 of JF1 and the LED connection for GLAN Port2 is on Pins 9 and 10. Attach the NIC LED cables to display network activity. Refer to the table on the right for pin definitions.

GLAN1/2 LED Pin Definitions (JF1)	
Pin#	Definition
9/11	Vcc
10/12	NIC LED



A. HDD LED
B. NIC1 LED
C. NIC2 LED



Overheat/Fan Fail LED (OH)

Connect an LED to the OH/Fan Fail connection on pins 7 and 8 of JF1 to provide advanced warnings of chassis overheating or fan failure. Refer to the table on the right for pin definitions.

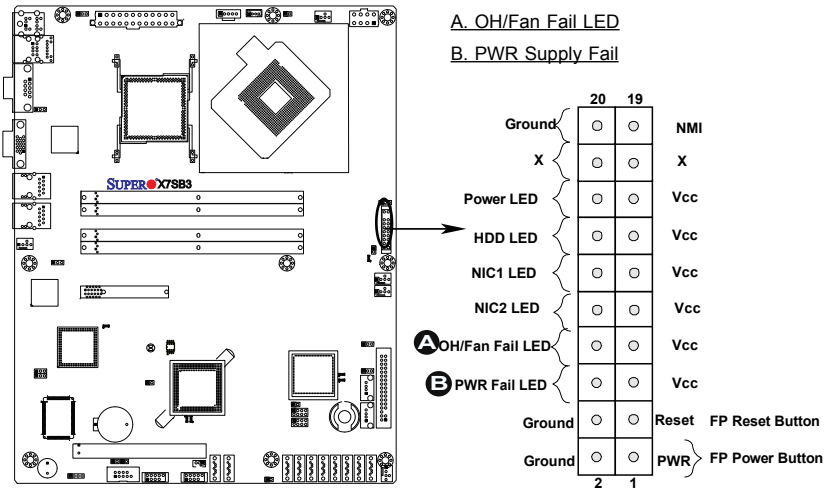
OH/Fan Fail LED Pin Definitions (JF1)	
Pin#	Definition
7	Vcc
8	OH/Fan Fail

OH/Fan Fail Indicator Status	
State	Definition
Off	Normal
On	Overheat
Flash-ing	Fan Fail

Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

PWR Fail LED Pin Definitions (JF1)	
Pin#	Definition
5	Vcc
6	Power Fail



Reset Button

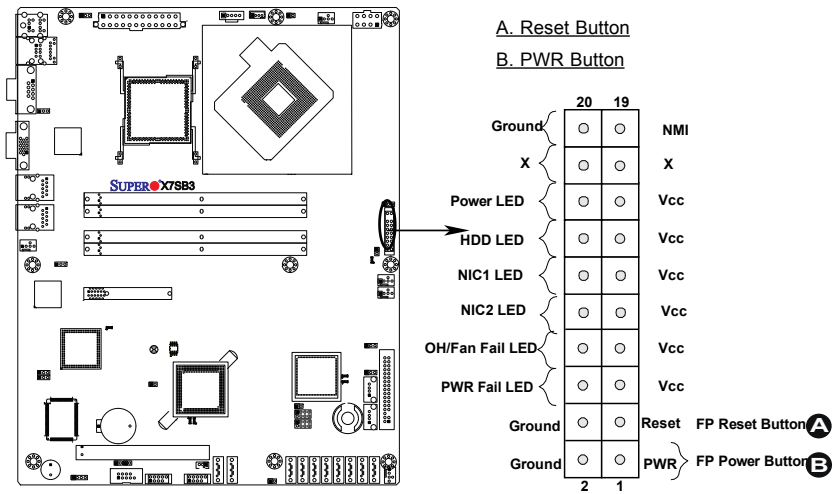
The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to the hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)	
Pin#	Definition
3	Reset
4	Ground

Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS - see Chapter 4). To turn off the power when set to suspend mode, press the button for at least 4 seconds. Refer to the table on the right for pin definitions.

Power Button Pin Definitions (JF1)	
Pin#	Definition
1	Power On
2	Ground



2-6 Connecting to the Headers and Connectors

Power Connectors

ATX Power Connector

A 24-pin main power supply connector (JPW1) and an 8-pin CPU PWR connector (JPW2) are located on the motherboard. These power connectors meet the SSI EPS 12V specification. For the 8-pin PWR (JPW2), please refer to the item listed below. See the table on the right for pin definitions.

ATX Power 24-pin Connector Pin Definitions

Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

Required Connection

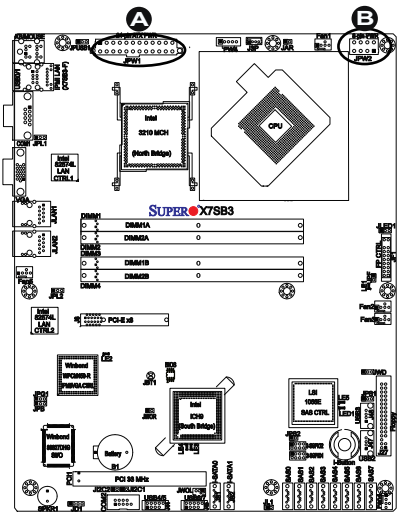
Processor Power Connector

In addition to the Primary ATX power connector (above), the 12V 8-pin CPU PWR connector at JPW2 must also be connected to your power supply. See the table on the right for pin definitions.

12V 8-pin Power CPU Connector Pin Definitions

Pins	Definition
1 through 4	Ground
5 through 8	+12V

Required Connections



A. 24-pin ATX PWR

B. 8-pin Processor PWR

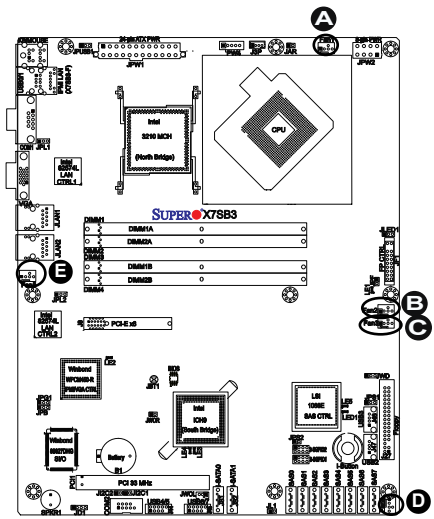
Fan Headers

Fan Headers

The X7SB3/X7SB3-F has five system/chassis/CPU fan headers (Fans 1~Fan 5). These fan headers support 4-pin or 3-pin fans. However, for the system to function properly, please use all 3-pin or all 4-pin fans on a motherboard. See the table on the right for pin definitions.

Note: The onboard fan speeds are controlled by Thermal Management via BIOS Hardware Monitoring in the Advanced Setting. (The default setting is **Disabled**.)

Fan Header Pin Definitions	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	PWR Modulation



A. Fan 1
B. Fan 2
C. Fan 3
D. Fan 4
E. Fan 5

I/O Connections

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located on the I/O backplane. See the table on the right for pin definitions. (The mouse port is above the keyboard port.) See the table on the right for pin definitions.

PS/2 Keyboard and Mouse Port Pin Definitions

Pin#	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

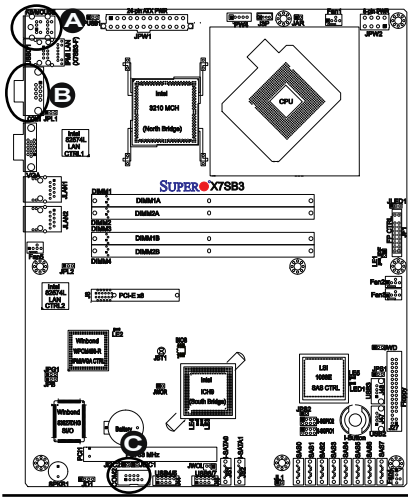
Serial Ports

COM1 and COM2 are serial port connections located on the motherboard. COM1 is a connector located on the I/O backplane. COM2 is a header located below PCI Slot 1 to provide front access. See the table on the right for pin definitions.

Serial Port Pin Definitions

Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

Pin 10 (Key) is available on COM2 only. NC: No Connection.



A. Keyboard/Mouse
B. COM1
C. COM2

Universal Serial Bus (USB)

There are eight USB 2.0 (Universal Serial Bus) ports/headers on the motherboard. Two of them are Back Panel USB ports: USB 0~1. The other six are front panel accessible USB connections. USB 2 and USB 3 are Type A connectors. USB 4~5, and USB 6~7 are Front Panel Internal Ports. See the tables on the right for pin definitions.

Note: To comply with FCC requirements, please do not attach an un-shielded cable to a USB port, even if there is no device attached to the cable. Use only a shielded USB cable that meets the requirements for a USB device.

Back Panel USB (USB 0~1)

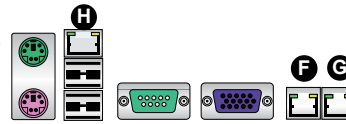
Pin#	Definitions
1	+5V
2	PO-
3	PO+
4	Ground
5	N/A

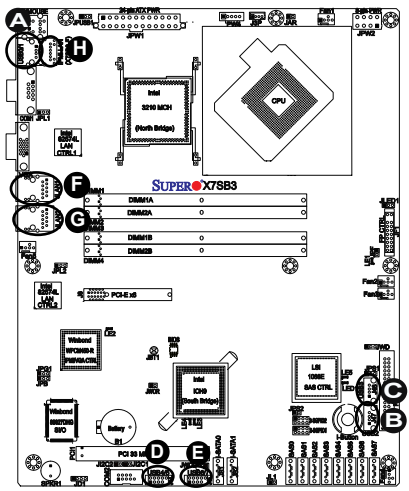
Front Panel USB Pin Definitions (USB 2~7)

USB 2/4/6/7 Pin #	Definition	USB 3/5 Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	No connection	5	Key

GLAN 1/2 Ethernet Ports and IPMI-dedicated LAN Port

Two Ethernet ports are located on the I/O backplane. These ports accept RJ45 type cables. LAN 1/2 are G-bit LAN ports supported by the Intel 82574L controller. The IPMI LAN located above USB ports on the X7SB3-F is supported by the Realtek RTL8201N Controller. (IPMI-dedicated LAN is available on the X7SB3-F only.).

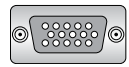




A. USB 0/1
B. USB 2
C. USB 3
D. USB 4/5
E. USB 6/7
F. LAN Port 1
G. LAN Port 2
H. IPMI LAN (X7SB3-F only)

VGA Connector

A VGA connector is located next to COM1 port on the IO backplane. This Video port is supported by the Winbond Hermon-R chip. Refer to the board layout below for the location.

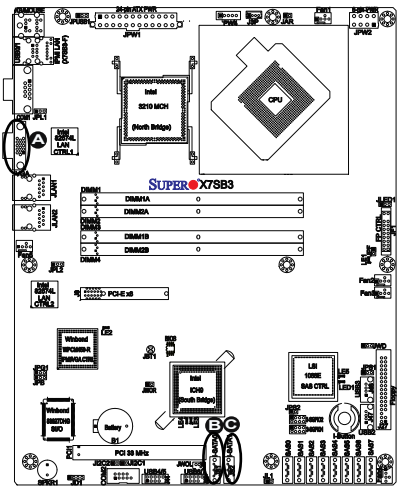


Serial ATA Ports

Two Serial ATA (SATA) ports (SATA0~SATA1) are located at JS1~JS2 on the motherboard. Additional four SATA ports located at JS3~JS6 are optional. These SATA connections are supported by Intel South Bridge to provide Serial-Link signal transmissions on the motherboard. See the table on the right for pin definitions. Refer to the board layout below for the locations of the headers.

SATA Port Pin Definitions

Pin#	Definition	Pin	Definition
1	Ground	2	TX+
3	TX-	4	Ground
5	RX-	6	RX+
7	Ground		



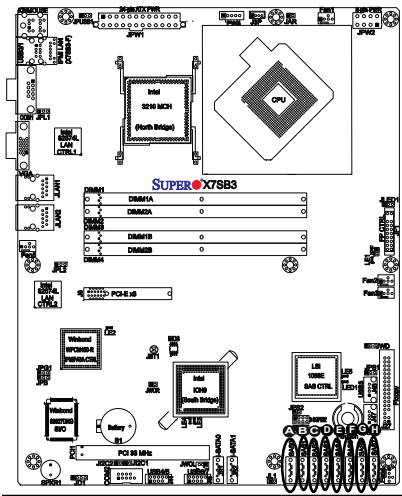
A. VGA
B. SATA0
C. SATA1

SAS Ports

Eight SAS (Serial-Attached SCSI) ports (SAS0~SAS7) are located below the LSI 1068E SAS Controller on the motherboard. These SAS connections are supported by the LSI 1068E Controller to provide Serial-Link signal transmissions on the motherboard. See the table on the right for pin definitions. Refer to the board layout below for the locations of the headers.

SAS Port Pin Definitions

Pin#	Definition	Pin	Definition
1	Ground	2	TX+
3	TX-	4	Ground
5	RX-	6	RX+
7	Ground		



A. SAS0
B. SAS1
C. SAS2
D. SAS3
E. SAS4
F SAS5
G SAS6
H. SAS7

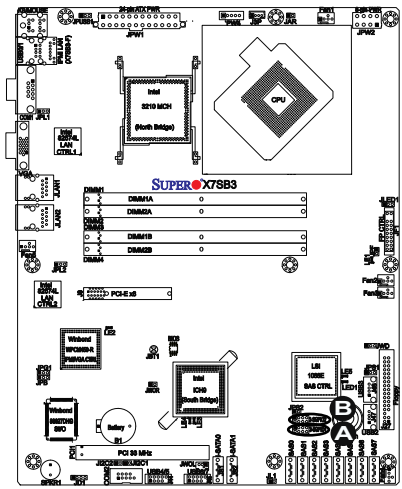
3-SGPIO Headers

Two Serial-Link General Purpose Input/Output headers are located between the SAS Controller and the SAS ports on the motherboard. These headers are used to communicate with the onboard Enclosure Management chip. See the table on the right for pin definitions. Refer to the board layout below for the locations of the headers.

3-SGPIO Pin Definitions

Pin#	Definition	Pin	Definition
1	NC	2	NC
3	Ground	4	DATA Out
5	Load	6	Ground
7	Clock	8	NC

NC: No Connection



A. 3-SGPIO1

B. 3-SGPIO2

Onboard Connectors/Headers

Wake-On-Ring

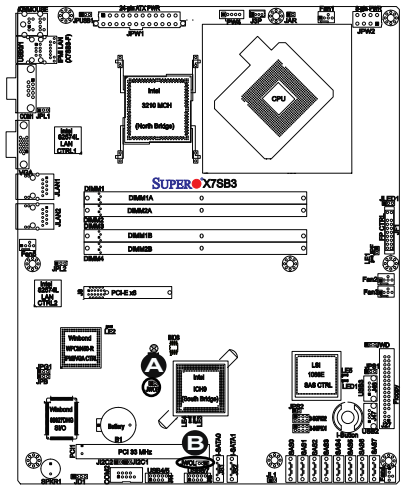
The Wake-On-Ring header is located at JWOR. This header is used to "wake up" your system when it receives an incoming call to the modem while in suspend state. See the table on the right for pin definitions. You must have a Wake-On-Ring card and cable to use this feature.

Wake-On-Ring Pin Definitions	
Pin#	Definition
1	Ground
2	Wake-up

Wake-On-LAN

The Wake-On-LAN header is located at JWOL on the motherboard. See the table on the right for pin definitions. (You must have a LAN card with a Wake-On-LAN connector, and cable to use this feature.)

Wake-On-LAN Pin Definitions	
Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up



A. WOR

B. WOL

Speaker

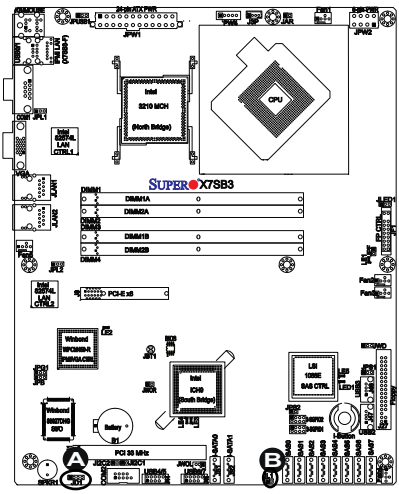
A Speaker header is located at JD1. Connect a cable to pins 1~4 of JD1 to an external speaker. If you wish to use the onboard speaker, you should close pins 3~4 with a jumper. See the table on the right for speaker pin definitions.

Speaker Connector Pin Definitions	
Pin Setting	Definition
Pins 3-4	Internal Speaker
Pins 1-4	External Speaker

Chassis Intrusion

A Chassis Intrusion header is located at JL1 on the motherboard. Attach an appropriate cable from the chassis to inform you of a chassis intrusion when the chassis is opened.

Chassis Intrusion Pin Definitions (JL1)	
Pin#	Definition
1	Intrusion Input
2	Ground



A. PWR LED/Speaker

B. Chassis Intrusion

Power I²C Connector (X7SB3-F only)

Power I²C (Power SMB) connector located at PW4 monitors the status of the power supply, fan and system temperature. See the table on the right for pin definitions.

PWR SMB Pin Definitions

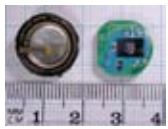
Pin#	Definition
1	Clock
2	Data
3	PWR Fail
4	Ground
5	+3.3V

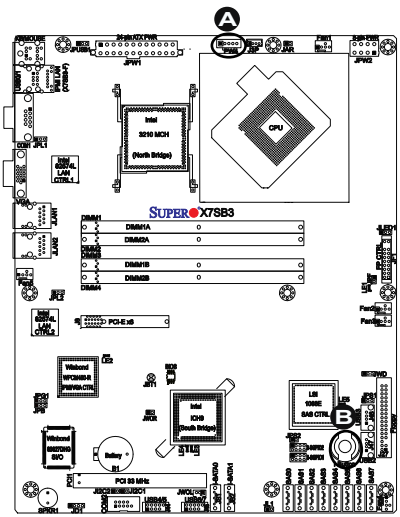
I-Button

The I-Button, located above the LSI chip on the motherboard, is a computer chip enclosed in a durable stainless container to enable RAID 5 under Software RAID mode. See the table on the right for pin definitions.

I-Button Pin Definitions

Pin#	Definition
1	Ground
2	GPIO1
3	Ground





A. PWR SMB

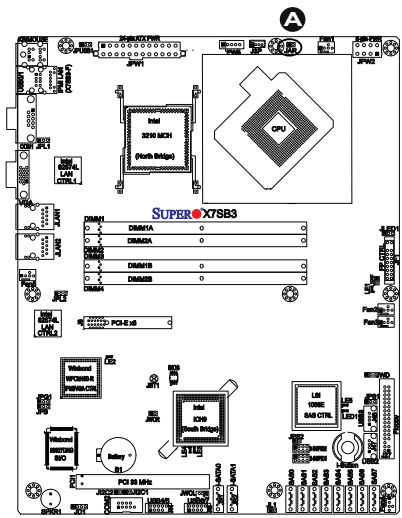
B. I-Button

Alarm Reset

If three power supplies are installed and Alarm Reset (JAR) is enabled, the system will notify you when any of the three power modules fails. Connect JAR to a micro-switch to enable you to turn off the alarm that is activated when a power module fails. See the table on the right for pin definitions.

Alarm Reset Pin Definitions	
Pin Setting	Definition
Pin 1	Ground
Pin 2	Alarm Reset

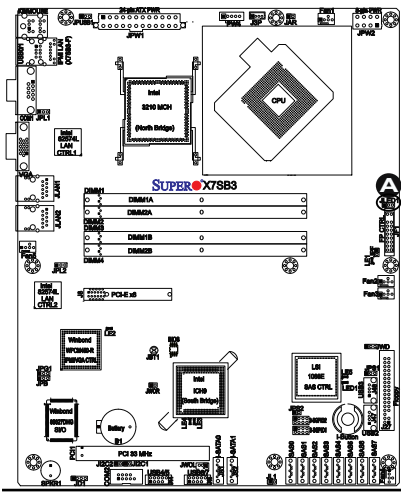
A. Alarm Reset



Onboard Power LED

An onboard Power LED header is located at JLED1. This Power LED header is connected to Front Control Panel located at JF1 to indicate the status of system power. See the table on the right for pin definitions.

Onboard PWR LED Pin Definitions	
Pin#	Definition
1	VCC
2	No Connection
3	Connection to PWR LED in JF1

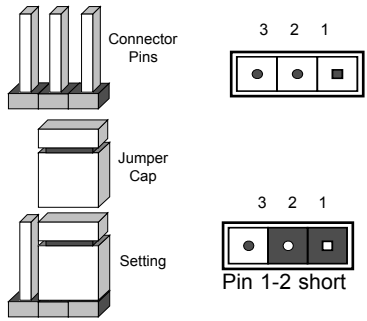


A. PWR LED

2-7 Jumper Settings

Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.

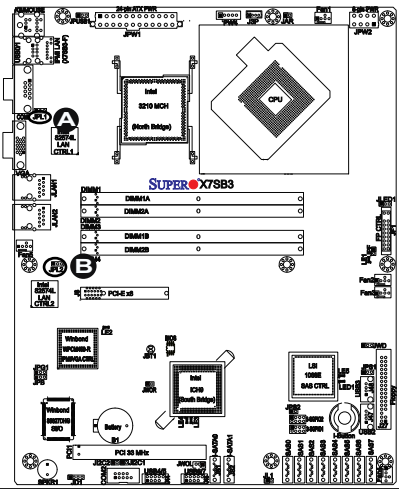


Note: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.

GLAN Enable/Disable

JPL1/JPL2 enable or disable GLAN Port1/GLAN Port2 on the motherboard. See the table on the right for jumper settings. The default setting is **Enabled**.

GLAN Enable Jumper Settings	
Pin#	Definition
1-2	Enabled (default)
2-3	Disabled



A. GLAN 1 Enable

B. GLAN 2 Enable

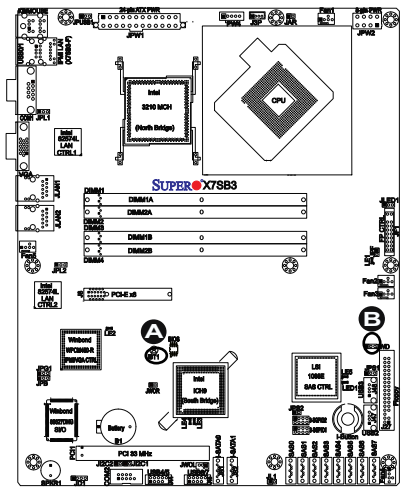
CMOS Clear

JBT1 is used to clear CMOS. Instead of pins, this "jumper" consists of contact pads to prevent the accidental clearing of CMOS. To clear CMOS, use a metal object such as a small screwdriver to touch both pads at the same time to short the connection. Always remove the AC power cord from the system before clearing CMOS. Note: For an ATX power supply, you must completely shut down the system, remove the AC power cord and then short JBT1 to clear CMOS.

Watch Dog Enable/Disable

Watch Dog (JWD) is a system monitor that reboots the system when a software application hangs. Close pins 1-2 to reset the system if an application hangs. Close pins 2-3 to generate a non-maskable interrupt signal for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in the BIOS.

Watch Dog Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Reset (default)
Pins 2-3	NMI
Open	Disabled



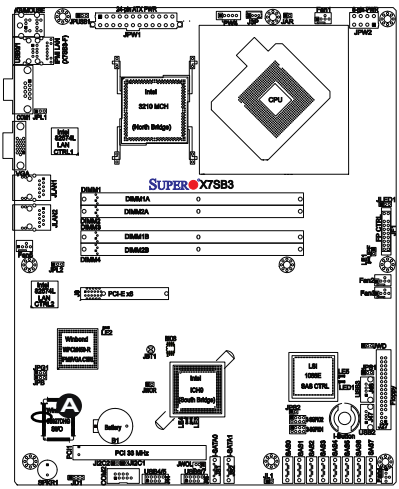
A. Clear CMOS

B. Watch Dog Enable

(BMC) VGA Enable

JPG1 allows you to enable or disable the onboard VGA connection supported by the Winbond WPCM450-R Controller. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

(BMC) VGA Enable/Disable Jumper Settings (JPG1)	
Both Jumpers	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled



A. (BMC) VGA Enable

I²C Bus to PCI Slots

Jumpers JI²C1 and JI²C2 allow you to connect the System Management Bus (SMB) to PCI-E and PCI slots. JI²C1 is used to enable or disable SMB Clock, and JI²C2 is for SMB data. The default setting is set to **Disabled**. See the table on the right for jumper settings.

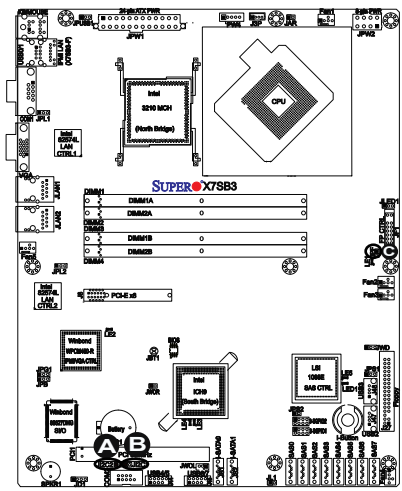
JI²C1 to PCI-Slots Jumper Settings	
Jumper	Definition
On	SMB CLK Enabled
Off (Default)	SMB CLK Disabled

JI²C2 to PCI-Slots Jumper Settings	
Jumper	Definition
On	SMB Data Enabled
Off (Default)	SMB Data Disabled

Power Force-On

JPF is the Power Force-On jumper. Close pins 1~2 of this jumper to automatically turn on system power after a power outage. See the table on the right for pin definitions.

Power Force-On Pin Definitions	
Pin#	Definition
On	PWR Force-On
Off	Normal



A. I²C to PCI Slots (Clock)
B. I²C to PCI Slots (Data)
C. PWR Force-On

SAS Enable/Disable

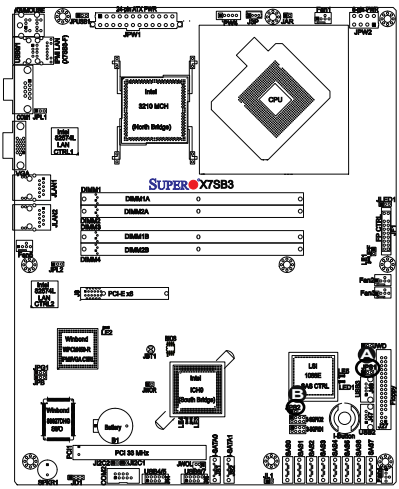
JPS1 allows you to enable or disable SAS Connectors. The default position is on pins 1 and 2 to enable SAS. See the table on the right for jumper settings.

SAS Enable/Disable Jumper Settings	
Jumper Settings	Definition
Pins 1-2	Enabled (Default)
Pins 2-3	Disabled

SAS RAID Mode Select

JPS2 allows you to select the SAS RAID mode. You can use either Software RAID or IT Mode. Close this jumper to use Software RAID (Default). Set this jumper to open to use the IT Mode.

Software RAID Jumper Settings	
Jumper Settings	Definition
Close (Default)	Software RAID Enabled
Open	IT Mode Enabled



A. SAS Enable

B. SAS RAID Mode Select

2-8 Onboard Indicators

Rear View
(when viewing from the back of the chassis.)

GLAN LEDs

There are two Intel GLAN ports and an IPMI-dedicated LAN port* on the motherboard. Each Gigabit Ethernet LAN port has two LEDs. The yellow LED indicates activity, while the Link LED may be green, amber or off to indicate the speed of the connection. See the tables on the right for more information.

*IPMI-dedicated LAN is available on the X7SB3-F only.

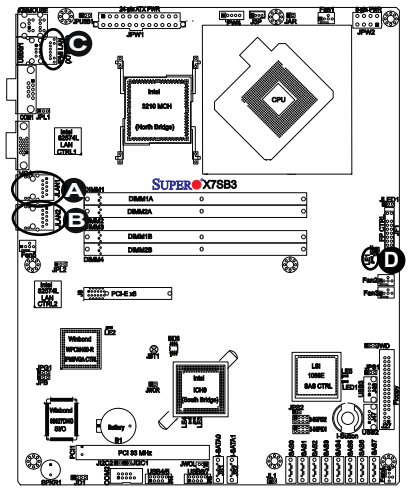
GLAN Activity Indicator LED Setting		
Color	Status	Definition
Yellow	Flashing	LAN Active

GLAN Link Indicator LED Settings	
LED Color	Definition
Off	No Connection or 10 Mbps
Green	100 Mbps
Amber	1 Gbps

Onboard Power LED

An Onboard Power LED is located at LE1 on the motherboard. When this LED Indicator is on, the system is on. Be sure to unplug the power cable before removing or adding any components. See the table on the right for more details.

Onboard PWR LED Indicator LED Settings	
LED Color	Definition
Off	System Off (PWR cable not connected)
Green: On	System Power On



A. GLAN Port1 LEDs
B. GLAN Port2 LEDs
C. IPMI LAN LEDs (X7SB3-F only)
D. Onboard PWR LED

SAS Heartbeat LED

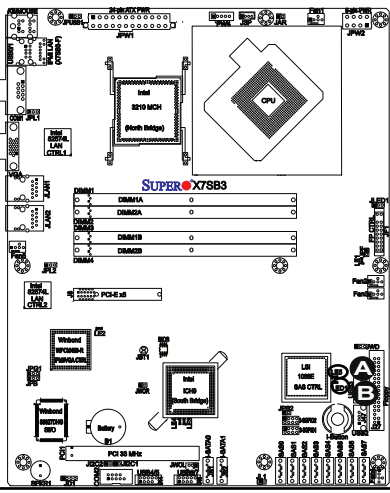
A SAS Heartbeat LED is located at LE5. When LE5 blinks, SAS connectors are ready for use. Refer to the table on the right for details. Also see the layout below for the LED location.

SAS Heartbeat LED Indicator (LE5) LED Settings	
Blinking: Yellow	SAS is ready for use

SAS Activity LED

A SAS Activity LED is located at LED1. When LED1 blinks, SAS is active. Refer to the table on the right for details. Also see the layout below for the LED location.

SAS Activity LED Indicator (LED1) LED Settings	
Blinking: Green	SAS is active



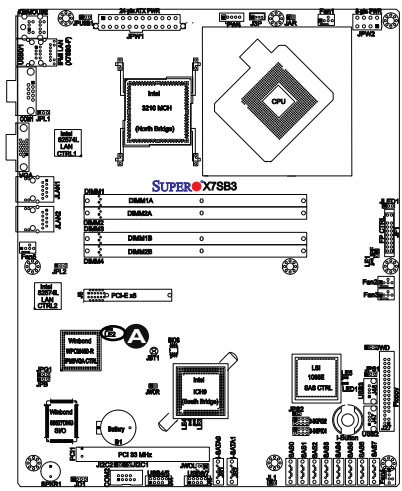
A. LE5: SAS Heartbeat LED

B. LED1: SAS Activity LED

IPMI Heartbeat LED (X7SB3-F only)

An IPMI Heartbeat LED is located at LE2. When LE2 blinks, the IPMI connection is available and ready for use. Refer to the table on the right for details. Also see the layout below for the LED location.

IPMI Heartbeat LED Indicator (LE2) LED Settings	
Blinking: green	IPMI is available



A. LE2: IPMI Heartbeat LED (X7SB3-F only)

2-9 Floppy Drive Connections

Connections

Note the following when connecting the floppy and hard disk drive cables:

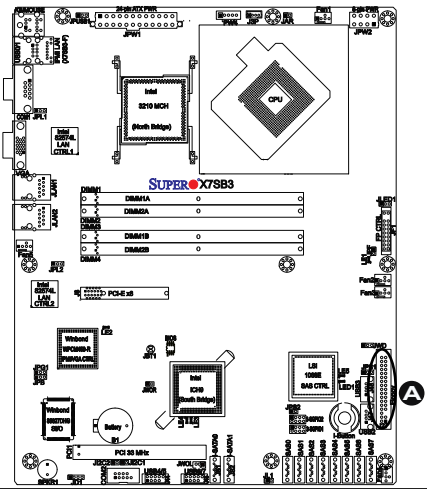
- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

Floppy Connector

The floppy connector is located next to the USB2 and USB3 connectors. See the table below for pin definitions.

Floppy Drive Connector Pin Definitions (Floppy)

Pin#	Definition	Pin #	Definition
1	Ground	2	FDHDIN
3	Ground	4	Reserved
5	Key	6	FDEDIN
7	Ground	8	Index
9	Ground	10	Motor Enable
11	Ground	12	Drive Select B
13	Ground	14	Drive Select B
15	Ground	16	Motor Enable
17	Ground	18	DIR
19	Ground	20	STEP
21	Ground	22	Write Data
23	Ground	24	Write Gate
25	Ground	26	Track 00
27	Ground	28	Write Protect
29	Ground	30	Read Data
31	Ground	32	Side 1 Select
33	Ground	34	Diskette



A. Floppy

Chapter 3

Troubleshooting

3-1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the 'Technical Support Procedures' and/or 'Returning Merchandise for Service' section(s) in this chapter. **Note: Always disconnect the power cord before adding, changing or installing any hardware components.**

Before Power On

1. Make sure that there are no short circuits between the motherboard and the chassis.

2. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse. Remove all add-on cards.

3. Install a CPU in CPU Socket and connect the chassis speaker and the power LED to the motherboard. (Make sure that the CPU is properly seated. Be sure to check all jumper settings as well.)

No Power

1. Make sure that there are no short circuits between the motherboard and the chassis.

2. Make sure that all jumpers are set to their default positions.

3. Make sure that the 115V/230V switch on the power supply is properly set.

4. Turn the power switch on and off to test the system. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.

No Video

1. If the power is on, and you have no video, please remove all the add-on cards and cables.

2. Use the speaker to determine if any beep codes exist. Refer to the Appendix for details on beep codes.

Losing the System's Setup Configuration

3. Make sure that you are using a high quality power supply. A poor quality power supply may cause the system to lose the CMOS setup information. Refer to Section 1-6 for details on recommended power supplies.

4. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.

5. If the above steps do not fix the Setup Configuration problem, contact your vendor for repairs.

Memory Errors

1. Make sure the DIMM modules are properly and fully installed. Check if DIMMs of different speeds or types have been installed. Also make sure that the BIOS setup is configured for the fastest speed of RAM used.

2. It is recommended to use the same RAM speed for all DIMMs in the system. Make sure you are using the correct type of DDR2 Unbuffered ECC/Non-ECC 800/667 MHz SDRAM (recommended by the manufacturer.)

3. Check for bad DIMM modules or slots by swapping a single module between four slots and noting the results. Make sure all memory modules are fully seated in their slots. As an interleaved memory scheme is used, you must install two modules at a time, beginning with Bank 1, then Bank 2, and so on (see Section 2-4). Check the position of the 115V/230V switch on the power supply.

3-2 Technical Support Procedures

Before contacting Technical Support, please take the following steps. Also, note that as a motherboard manufacturer, Supermicro does not sell directly to end-users, so it is best to first check with your distributor or reseller for troubleshooting services.

They should know of any possible problem(s) with the specific system configuration that was sold to you.

1. Please go through the 'Troubleshooting Procedures' and 'Frequently Asked Question' (FAQ) sections in this chapter or see the FAQs on our web site (http://www.supermicro.com/support/faqs/) before contacting Technical Support.

2. BIOS upgrades can be downloaded from our web site at http://www.supermicro.com/support/bios/.

3. If you still cannot resolve the problem, include the following information when contacting Supermicro for technical support:

- Motherboard model and PCB revision number
- BIOS release date/version (this can be seen on the initial display when your system first boots up)
- System configuration
- An example of a Technical Support form is on our web site at http://www.supermicro.com/support/contact.cfm/.

Distributors: For immediate assistance, please have your account number ready when placing a call to our technical support department. We can be reached by e-mail at support@supermicro.com or by fax at: (408) 503-8000, option 2.

3-3 Frequently Asked Questions

Question: What are the various types of memory that my motherboard can support?

Answer: The X7SB3/X7SB3-F has four 240-pin DIMM slots that support DDR2 ECC/Non-ECC 800/667 MHz SDRAM modules. It is strongly recommended that you do not mix memory modules of different speeds and sizes. (See Chapter 2 for detailed Information.)

Question: How do I update my BIOS?

Answer: It is recommended that you **do not** upgrade your BIOS if you are not experiencing any problems with your system. Updated BIOS files are located on our web site at http://www.supermicro.com/support/bios/. Please check our BIOS warning message and the information on how to update your BIOS on our web site. Select your motherboard model and download the BIOS (.rom) file to your computer. Also, check the current BIOS revision and make sure that it is

newer than your BIOS before downloading. You may choose the zip file or the .exe file. If you choose the zipped BIOS file, please unzip the BIOS file onto a bootable device or a USB pen/thumb drive. To flash the BIOS, run the batch file named "flash.bat" with the new BIOS .rom file from your bootable device or USB pen/thumb drive. Use the following format:

F:\> flash xxxxxxxx.rom <Enter>

Note: Be sure to insert a space immediately after "flash" and use only the file named “flash.bat” to update the BIOS.

When completed, your system will automatically reboot. If you choose the .exe file, please run the .exe file under Windows to create the BIOS flash floppy disk. Insert the floppy disk into the system you wish to flash the BIOS. Then, boot the system to the floppy disk. The BIOS utility will automatically flash the BIOS without any prompts. Please note that this process may take a few minutes to complete. Do not be concerned if the screen is paused for a few minutes.

Warning: Do not shut down or reset the system while updating the BIOS to prevent possible system boot failure!

When the BIOS flashing screen is completed, the system will reboot and will show “Press F1 or F2”. At this point, you will need to load the BIOS defaults. Press <F1> to go to the BIOS setup screen, and press <F9> to load the default settings. Next, press <F10> to save and exit. The system will then reboot.

Note: The SPI BIOS chip installed on this motherboard is not removable. To repair or replace a damaged BIOS chip, please send your motherboard to RMA at Supermicro for service.

Question: What's on the CD that came with my motherboard?

Answer: The supplied compact disc has quite a few drivers and programs that will greatly enhance your system. We recommend that you review the CD and install the applications you need. Applications on the CD include chipset drivers for the Windows OS, and security and audio drivers.

Question: When installing the Intel Matrix Storage Manager (MSM), it stops in the middle of installation and cannot continue, why?

Answer: If you are configuring this motherboard as a stand-alone unit, it means that you are unintentionally installing the complete version of MSM. The complete version looks of an IPMI server for validation, which it cannot find. Simply restart the MSM installation and select Custom Install => Standalone.

3-4 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

This warranty only covers normal consumer use and does not cover damage incurred in shipping or from failure due to the alternation, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Notes

Chapter 4

BIOS

4-1 Introduction

This chapter describes the Phoenix BIOS™ Setup utility for the X7SB3/X7SB3-F. The Phoenix ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the Manual Download area of the Supermicro web site <http://www.supermicro.com> for any changes to the BIOS that may not be reflected in this manual.

System BIOS

BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The Phoenix BIOS stores the system parameters, types of disk drives, video displays, etc. in the CMOS. The CMOS memory requires very little electrical power. When the computer is turned off, a backup battery provides power to the CMOS logic, enabling it to retain system parameters. Each time when the computer is powered on, the computer is configured with the values stored in the CMOS logic by the system BIOS, which gains control at boot up.

How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing the <Delete> key at the appropriate time during system boot. Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens. Beginning with Section 4-3, detailed descriptions are given for each parameter setting in the Setup utility.

4-2 Running Setup

Default settings are in bold text unless otherwise noted.

The BIOS setup options described in this section are selected by choosing the appropriate text from the main BIOS Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (See the next page).

When you first power on the computer, the Phoenix BIOS™ is immediately activated.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Delete> immediately after turning the system on, or

2. When the message shown below appears briefly at the bottom of the screen during the POST (Power On Self-Test), press the <Delete> key to activate the main Setup menu.

Press the <Delete> key to enter Setup

4-3 Main BIOS Setup

All main Setup options are described in this section. The main BIOS Setup screen displays below.

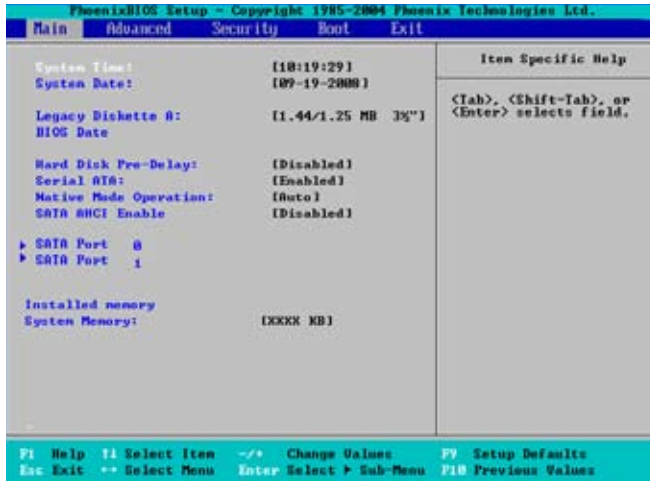
Use the Up/Down arrow keys to move between the different settings in each menu. Use the Left/Right arrow keys to change the options for each setting.

Press the <Esc> key to exit the BIOS Setup Menu. The next section describes in detail how to navigate through the menus.

Items that use submenus are indicated with the ▶icon. With the item highlighted, press the <Enter> key to access the submenu.

Warning: Do not shut down or reset the system while updating the BIOS to prevent possible boot failure.

Main BIOS Setup Menu



Main Setup Features

System Time

To set the system date and time, key in the correct information in the appropriate fields. Then press the <Enter> key to save the data.

System Date

Using the arrow keys, highlight the month, day and year fields, and enter the correct data. Press the <Enter> key to save the data.

BIOS Revision

This shows the revision number of the BIOS.

Legacy Diskette A

This setting allows the user to set the type of floppy disk drive installed as diskette A. The options are Disabled, 360Kb 5.25 in, 1.2MB 5.25 in, 720Kb 3.5 in, **1.44/1.25MB**, 3.5 in and 2.88 MB 3.5 in.

BIOS Date

The item displays the date that this version of BIOS was built.

Hard Disk Pre-Delay

This setting allows the user to add a delay before a hard drive is accessed by the BIOS for the first time. This delay will allow the time needed for the hard drive to be properly initialized before it is accessed by the BIOS to prevent a possible boot

Serial ATA

This setting allows the user to enable or disable Serial ATA connections. The options are Disabled and **Enabled.**

Native Mode Operation

Select Serial ATA for SATA or select Auto (Native Mode) for ATA. The options are: Serial ATA and **Auto**.

SATA AHCI Enable

Select Enable to enable the function of Serial ATA Advanced Host Interface. (Take caution when using this function. This feature is for advanced programmers only. Enhanced AHCI is available when the Windows XP-SP1 OS and the IAA Driver is used.) The options are Enabled and **Disabled**.

▶SATA Port 0 ~ 2

These settings allow the user to set the parameters of the drive indicated above. Hit <Enter> to activate the following sub-menu screen for detailed options of the items. Set the correct configurations accordingly. The items included in the sub-menu are:

Type

This feature allows the user to select the type of a drive specified. Select **Auto** to allow the BIOS to automatically set the capacity of the drive specified. Select User to allow the user to enter the parameters of the drive installed at this connection. Select CDROM if a CDROM drive is installed. Select ATAPI if a removable disk drive is installed.

CHS Format

The following items will be displayed by the BIOS:

Cylinders: This item indicates the status of Cylinders.

Headers: This item indicates the number of headers.

Sectors: This item displays the number of sectors.

Maximum Capacity: This item displays the maximum storage capacity of the system.

LBA Format

The following items will be displayed by the BIOS:

Total Sectors: This item displays the number of total sectors available in the LBA Format. (**Note**: The default setting changes when different devices are installed.)

Maximum Capacity: This item displays the maximum capacity in the LBA Format. (**Note**: The default setting changes when different devices are installed.)

Multi-Sector Transfers

This item allows the user to specify the number of sectors per block to be used for multi-sector transfer. The options are **Disabled**, 2 Sectors, 4 Sectors, 8 Sectors, and 16 Sectors. (**Note**: The default setting changes when different devices are installed.)

LBA Mode Control

This item determines whether the Phoenix BIOS will access the IDE Primary Master device via the LBA mode. The options are Enabled and **Disabled.** (**Note**: The default setting changes when different devices are installed.)

32-Bit I/O

Select Enable to enable the function of 32-bit IDE data transfer. The options are Enabled and **Disabled**. (**Note**: The default setting changes when different devices are installed.)

Transfer Mode

This option allows the user to set the transfer mode. The options are **Standard**, Fast PIO1, Fast PIO2, Fast PIO3, Fast PIO4, FPIO3/DMA1 and FPIO4/DMA2. (**Note**: The default setting changes when different devices are installed.)

Ultra DMA Mode

This option allows the user to configure the Ultra DMA Mode. The options are **Disabled**, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4, and Mode 5. (**Note**: The default setting changes when different devices are installed.)

Installed Memory

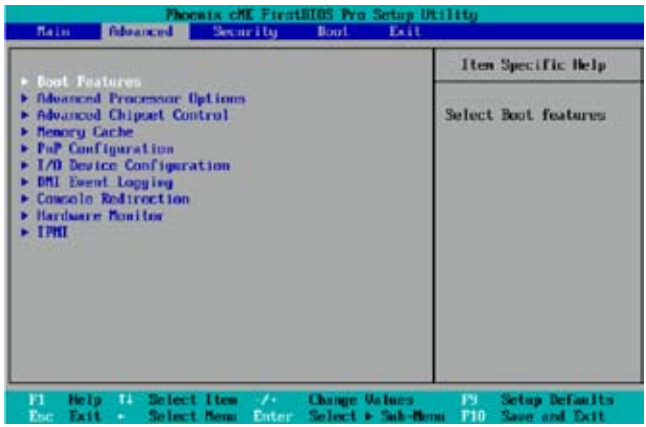
This feature informs you how much memory is installed in the system as detected by the BIOS.

System Memory

This feature informs you how much system memory is available as detected by the BIOS.

4-4 Advanced Setup

Choose Advanced from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. The items with a triangle beside them have submenus that can be accessed by highlighting the item and pressing <Enter>.



▶Boot Features

Access the submenu to make changes to the following settings.

IPMI (X7SB3-F only)

This setting allows you to **Enable** or Disable the onboard IPMI slot. The options are **Enable** and Disabled.

Quiet Boot

This setting allows you to **Enable** or Disable the graphic logo screen display at bootup.

QuickBoot Mode

If enabled, this feature will speed up the POST (Power On Self Test) routine by skipping certain tests after the computer is turned on. The settings are **Enabled** and Disabled. If Disabled, the POST routine will run at normal speed.

POST Errors

Select **Enabled** to stop the POST routine and allow the system to display error messages when an error occurs at bootup. The options are **Enabled** and Disabled.

ACPI Mode

Select **Yes** to use the ACPI (Advanced Configuration and Power Interface) power management on your system. The options are **Yes** and No.

Power Button Behavior

If set to **Instant-off**, the system will power on or power off immediately as soon as the user hits the power button. If set to 4-seconds Override, the system will power on or power off when the user presses the key for 4 seconds and longer. The options are Instant-off and **4-second Override**.

Resume On Modem Ring

Select On to "wake your system up" when an incoming call is received by your modem. The options are On and **Off**.

Resume On PME#

Select On to "wake your system up" from the PME#. The options are **On** and Off.

PS/2 Keyboard (KB)/Mouse Wake Up

Select Enable to "wake your system up" from the S3, S4 or S5 state. The default setting is **Disabled**.

USB Wake Up

Select Enable to "wake your system up" via a USB device. If this feature is set enabled, you will also need to enable the JPUSB1 jumper by closing pins 1-2. (Please refer to Page 1-4 and Chapter 2 for more details). The default setting is **Disabled**.

Power Loss Control

This setting allows you to choose how the system will react when power returns after an unexpected power loss. The options are Stay Off, Power On, and **Last State**.

Watch Dog

If enabled, this option will automatically reset the system if it is not active for more than 5 minutes. The options are Enabled and **Disabled**.

Extended Shadow RAM

Select Enabled to enable Extended Shadow RAM and allow the contents stored in ROM to be directly copied into extended memory for faster operation. Take caution when using this feature. If the system hangs, reset the setting for this item and reboot the system. The options are Enabled and **Disabled**.

Summary Screen

This setting allows you to **Enable** or Disable the summary screen which displays the system configuration during bootup.

▶Advanced Processor Options

Access the submenu to make changes to the following settings.

CPU Speed

This is a display to indicate the speed of the CPU installed on the motherboard.

Frequency Ratio (Available when supported by the CPU)

The feature allows the user to set the internal frequency multiplier for the CPU. The options are: **Default** and x9.

Frequency High Ratio (Available when supported by the CPU)

The feature allows the user to set the internal frequency multiplier support for the Intel Speedstep CPU. Please note that the system might hang if a wrong frequency that is not supported by the CPU is selected. When this occurs, clear the CMOS and re-configure this setting to recover the system. The default setting is **x12**.

Hyperthreading (Available when supported by the CPU)

Set to **Enabled** to use the Hyperthreading Technology, which will result in increased CPU performance. The options are Disabled and **Enabled**.

Core-Multi-Processing (Available when supported by the CPU)

Set to Enabled to use a processor's Second Core and beyond. (Please refer to Intel's web site for more information.) The options are Disabled and **Enabled.**

Machine Checking (Available when supported by the CPU)

Set to Enabled to activate the function of Machine Checking and allow the CPU to detect and report hardware (machine) errors via a set of model-specific registers (MSRs). The options are Disabled and **Enabled**.

Compatible FPU Code (Available when supported by the CPU)

Set to Enabled to keep the content of the last instruction Operating Code (OPCode) in the floating point (FP) state. The options are **Disabled** and Enabled.

Thermal Management 2 (Available when supported by the CPU)

Set to **Enabled** to use Thermal Management 2 (TM2) which will lower CPU voltage and frequency when the CPU temperature reaches a predefined overheat threshold. Set to Disabled to use Thermal Manager 1 (TM1), allowing CPU clocking to be regulated via CPU Internal Clock modulation when the CPU temperature reaches the overheat threshold.

Adjacent Cache Line Prefetch (Available when supported by the CPU)

The CPU fetches the cache line for 64 bytes if this option is set to Disabled. The CPU fetches both cache lines for 128 bytes as comprised if Enabled. The options are Disabled and **Enabled.**

Set Maximum Ext. CPUID=3

When set to Enabled, the Maximum Extended CPUID will be set to 3. The options are **Disabled** and Enabled.

Echo TPR

Set to **Enabled** to prevent xTPR messages from being sent to the system. The options are Disabled and **Enabled**.

C1 Enhanced Mode (Available when supported by the CPU)

Set to Enabled to enable the Enhanced Halt State to lower CPU voltage/frequency to prevent overheat. The options are Enabled and **Disabled**. (**Note:** please refer to Intel's web site for detailed information.)

Intel ® Virtualization Technology (Available if supported by the CPU.)

Select Enabled to use the feature of Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are Enabled and **Disabled**. (Note: If there is any change to this setting, you will need to power off and restart the system for the change to take effect.) Please refer to Intel's web site for detailed information.

No Execute Mode Memory Protection (Available if supported by the CPU and the OS.)

Set to **Enabled** to enable Execute Disable Bit and allow the processor to classify areas in the memory slot where an application code can execute and where it cannot, and thus preventing a worm or a virus from inserting and creating a flood of codes to overwhelm the processor and damage the system during an attack.

Note: this feature is available when your OS and your CPU support the functionality of Execute Disable Bit. The options are Disabled and **Enabled**.

Enhanced Intel Speed Step Support (Available if supported by the CPU)

Select Enabled to use the Enhanced Intel SpeedStep Technology and allow the system to automatically adjust processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. The options are Enabled (-C States, GV1/GV3 are enabled), **GV1/GV3 Only** (C States: Disabled), C-States Only (-G1/G3: Disabled), and Disabled (-C States, GV1/GV3 are disabled).

▶Advanced Chipset Control

Access the submenu to make changes to the following settings.

Warning: Take caution when changing the Advanced settings. Any incorrect setting, inaccurate DRAM timing, or high DRAM frequency may make the system unstable. When this occurs, reset the setting to the default setting.

Clock Spectrum Feature

When set to Enabled, the BIOS will monitor the level of Electromagnetic Interference caused by the components and will attempt to decrease the interference whenever needed. The options are Enabled and **Disabled**.

Memory Remapping

Select Enable to use the functionality of Memory Remapping above 4GB. The settings are **Enabled** and Disabled.

Enable VT-d

Select Enable to enable the functionality of the Intel Virtualization Technology for Direct I/O support, which offers fully-protected I/O resource-sharing across the Intel platforms, providing the user with greater reliability, security and availability in networking and data-sharing. The settings are Enabled and **Disabled**.

High Precision Event Time

Select Yes to activate the High Precision Event Timer (HPET), which is capable of producing periodic interrupts at a much higher frequency than a Real-time Clock (RTC) can in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruction embedded in a CPU. The High Precision Event Timer is used to replace the 8254 Programmable Interval Timer. The options for this feature are Yes and **No**.

Route Port 80h Cycles to

This feature allows the user to decide which bus to send debug information to. The options are **PCI** and LPC.

USB Host Controller

Select Enabled to enable the onboard USB Host Controllers. The options are **Enabled** and Disabled.

EHCI Controller

Select **Enabled** to use the EHCI (Enhanced Host Controller Interface Specification) for USB connections. The options are **Enabled** and Disabled.

Legacy USB Support

This setting allows you to enable support for Legacy USB devices. The settings are **Enabled** and Disabled.

▶Memory Cache

Cache System BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a System BIOS buffer to allow the BIOS to write (cache) its data into this reserved memory area. Select **Write Protect** to enable this function, and this area will be reserved for BIOS ROM access only. Select Uncached to disable this function and make this area available for other devices.

Cache Video BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a Video BIOS buffer to allow the BIOS to write (cache) data into this reserved memory area. Select **Write Protect** to enable the function and this area will be reserved for Video BIOS ROM access only. Select Uncached to disable this function and make this area available for other devices.

Cache Base 0-512K

If enabled, this feature will allow the data stored in the base memory area of block 0-512K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or to be written into L1, L2 cache inside the CPU to speed up CPU operations .Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into the system memory at the same time. Select Write Protect to prevent data from being written into the base memory area of Block 0-512K. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

Cache Base 512K-640K

If enabled, this feature will allow the data stored in the memory area of 512K-640K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or written into L1, L2 or L3 cache inside the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into the system memory at the same time. Select Write Protect to prevent data from being written into the base memory area of Block 512K-640K. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data pro-

cessing and operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

Cache Extended Memory

If enabled, this feature will allow the data stored in the extended memory area to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or written into L1, L2 or L3 cache inside the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into the system memory at the same time. Select Write Protect to prevent data from being written into the extended memory area above 1 MB. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

▶PnP Configuration

Access the submenu to make changes to the following settings for PCI devices.

▶PCI 32 Slot/PCI-Express x8 Slot

Access the submenu for each of the settings above to make changes to the following settings for the PCI slots indicated above:

Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

Enable Master

This setting allows you to enable the selected device as the PCI bus master. The options are **Enabled** and Disabled.

Latency Timer

This setting allows you to set the clock rate for the Bus Master. A high-priority, high-throughout device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, and 00E0h. For Unix, Novelle and other Operating Systems, please select the option: other. If a drive fails after the installation of a new software, you might want to change this setting and try again. A different OS requires a different Bus Master clock rate**.**

▶Onboard SAS/LAN1/LAN2

Access the submenu to make changes to the following settings for the slots indicated above:

Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are Enabled and Disabled. The default for the Onboard SAS is **Enabled**. The default for LAN1 and LAN2 is **Disabled**.

Enable Master

This setting allows you to enable the selected device as the PCI bus master. The options are Enabled and **Disabled.**

Latency Timer

This setting allows you to set the clock rate for the Bus Master. A high-priority, high-throughout device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, and 00E0h. For the Unix, Novelle and other Operating Systems, please select the option: other. If a drive fails after the installation of a new software, you might want to change this setting and try again. A different OS requires a different Bus Master clock rate**.**

▶I/O Device Configuration

Access the submenu to make changes to the following settings.

KBC Clock Input

This setting allows you to set a clock frequency for the KBC. The options are 6MHz, 8MHz, **12MHz,** and 16MHz.

Serial Port A

This setting allows you to decide how Serial Port A will be controlled. The options are **Enabled** (user defined), and Disabled.

Base I/O Address

This setting allows you to select the base I/O address for Serial Port A. The options are **3F8**, 2F8, 3E8, and 2E8.

Interrupt

This setting allows you to select the IRQ (interrupt request) for Serial Port A. The options are IRQ3 and **IRQ4**.

Serial Port B

This setting allows you to decide how Serial Port B will be controlled. The options are **Enabled** (user defined), Disabled, and OS Controlled.

Mode

This setting allows you to set the type of a device that will be connected to Serial Port B. The options are **Normal**, IR (for an infrared device) and ASK-IR.

Base I/O Address

This setting allows you to select the base I/O address for Serial Port B. The options are 3F8, **2F8**, 3E8 and 2E8.

Interrupt

This setting allows you to select the IRQ (interrupt request) for Serial Port B. The options are **IRQ3** and IRQ4.

Floppy Disk Controller

This setting allows you to decide how the floppy disk controller will be controlled. The options are **Enabled** (user defined), Disabled, and Auto (BIOS and OS controlled).

▶DMI Event Logging

Access the submenu to make changes to the following settings.

Event Log Validity

This is a display to inform you of the event log validity. It is not a setting.

Event Log Capacity

This is a display to inform you of the event log capacity. It is not a setting.

View DMI Event Log

Highlight this item and press <Enter> to view the contents of the event log.

Event Logging

This setting allows you to **Enable** or Disable event logging.

Mark DMI Events as Read

Highlight this item and press <Enter> to mark the DMI events as read.

Clear All DMI Event Logs

Select Yes and press <Enter> to clear all DMI event logs. The options are Yes and **No**.

▶Console Redirection

Access the submenu to make changes to the following settings.

COM Port Address

This item allows you to specify which COM port to direct the remote console to: On-board COM A, On-board COM B or **On-board IPMI**. This setting can also be Disabled.

BAUD Rate

This item allows you to set the BAUD rate for console redirection. The options are 300, 1200, 2400, 9600, 19.2K, 38.4K, 57.6K, and **115.2K**.

Console Type

This item allows you to set console redirection type. The options are VT100, VT100/8bit, PC-ANSI/7bit, **PC ANSI**, VT100+, VT-UTF8 and ASCII.

Flow Control

This item allows you to select the flow control option for the console. The options are: None, XON/XOFF, and **CTS/RTS**.

Console Connection

This item allows you to decide how console redirection is to be connected: either **Direct** or Via Modem.

Continue CR after POST

Select on to continue with console redirection after the POST routine. The options are On and **Off**.

▶Hardware Monitoring

Highlight an item and hit <Enter> to see the status of the item:

CPU Overheat Alarm

This option allows the user to select the CPU Overheat Alarm setting which determines when the CPU OH alarm will be activated to provide warning of possible CPU overheat.

Warning: Any temperature that exceeds the CPU threshold temperature predefined by the CPU manufacturer may result in CPU overheat or system instability. When the CPU temperature reaches this predefined threshold, the CPU and system cooling fans will run at full speed.

The options are:

The Early Alarm Setting: Select this setting if you want the CPU overheat alarm (including the LED and the buzzer) to be triggered as soon as the CPU temperature reaches the CPU overheat threshold as predefined by the CPU manufacturer.

The Default Alarm: Select this setting if you want the CPU overheat alarm (including the LED and the buzzer) to be triggered when the CPU temperature reaches about 5ºC above the threshold temperature as predefined by the CPU manufacturer to give the CPU and system fans additional time needed for CPU and system cooling.

CPU Temperature

The CPU Temperature feature will display the CPU temperature status as detected by the BIOS:

Low – This level is considered as the 'normal' operating state. The CPU temperature is well below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS (Fan Speed Control).

User intervention: No action required.

Medium – The processor is running warmer. This is a 'precautionary' level and generally means that there may be factors contributing to this condition, but the CPU is still within its normal operating state and below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS. The fans may adjust to a faster speed depending on the Fan Speed Control settings.

User intervention: No action is required. However, consider checking the CPU fans and the chassis ventilation for blockage.

High – The processor is running hot. This is a 'caution' level since the CPU's 'Temperature Tolerance' has been reached (or has been exceeded) and may activate an overheat alarm:

The Default Alarm – the Overheat LED and system buzzer will activate if the High condition continues for some time after it is reached. The CPU fan will run at full speed to bring the CPU temperature down. If the CPU temperature still increases even with the CPU fan running at full speed, the system buzzer will activate and the Overheat LED will turn on.

The Early Alarm – the Overheat LED and system buzzer will be activated exactly when the High level is reached. The CPU fan will run at full speed to bring the CPU temperature down.

Note: In both the alarms above, please take immediate action as shown below. See CPU Overheat Alarm to modify the above alarm settings.

User intervention: If the system buzzer and Overheat LED has activated, take action immediately by checking the system fans, chassis ventilation and room temperature to correct any problems. Note: the system may shut down if it continues for a long period to prevent damage to the CPU.

Notes: The CPU thermal technology that reports absolute temperatures (Celsius/Fahrenheit) has been upgraded to a more advanced feature by Intel in its newer processors. The basic concept is each CPU is embedded by unique temperature information that the motherboard can read. This 'Temperature Threshold' or 'Temperature Tolerance' has been assigned at the factory and is the baseline on which the motherboard takes action during different CPU temperature conditions (i.e., by increasing CPU Fan speed, triggering the Overheat Alarm, etc). Since CPUs can have different 'Temperature Tolerances', the installed CPU can now send information to the motherboard what its 'Temperature Tolerance' is, and not the other way around. This results in better CPU thermal management.

Supermicro has leveraged this feature by assigning a temperature status to certain thermal conditions in the processor (Low, Medium and High). This makes it easier for the user to understand the CPU's temperature status, rather than by just simply seeing a temperature reading (i.e., 25^{o}C).

The information provided above is for your reference only. For more information on thermal management, please refer to Intel's Web site at www.Intel.com.

Fan1 - Fan 5

If the feature of Auto Fan Control is enabled, the BIOS will automatically display the status of the fan as specified.

Fan Speed Control Modes

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vice versa.

Select Workstation if your system is used as a Workstation. Select Server if your system is used as a Server. Select 3-pin if your chassis uses 3-pin fans. Select 4-pin if your chassis uses 4-pin fans. Select Disable (Full Speed) to disable the fan speed control function and allow the onboard fans to constantly run at the full speed (12V). The Options are: 1. **Disabled (Full Speed @12V),** 2. 3-pin (Server), 3. 3-pin (Workstation), 4. 4-pin (Server), and 5. 4-pin (Workstation).

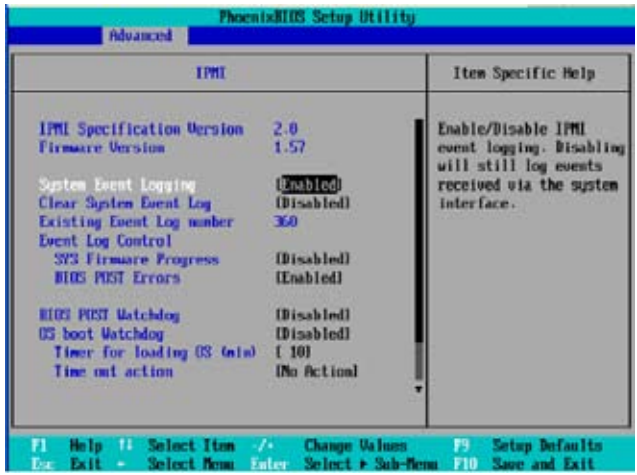
Voltage Monitoring

The following items will be monitored and displayed:

VcoreA,-12V/+12V, V_DIMM, 5V, +3.3V/+3.3Vsb, and Vbatt.

Note: In the Windows OS environment, the Supero Doctor III settings take precedence over the BIOS settings. When first installed, Supero Doctor III adopts the temperature threshold settings previously set in the BIOS. Any subsequent changes to these thresholds must be made within Supero Doctor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in the BIOS.

▶IPMI (For the X7SB3-F only)


PhoenixBIOS Setup Utility
Advanced
IPMI
Item Specific Help
IPMI Specification Version 2.0
Firmware Version 1.57
System Event Logging [Enabled]
Clear System Event Log [Disabled]
Existing Event Log number 360
Event Log Control
SYS Firmware Progress [Disabled]
BIOS POST Errors [Enabled]
BIOS POST Watchdog [Disabled]
OS boot Watchdog [Disabled]
Timer for loading OS (min) [10]
Time out action [No Action]
Enable/Disable IPMI event logging. Disabling will still log events received via the system interface.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ← Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

Firmware Version

This item displays the current Firmware Version.

System Event Logging

Select Enabled to enable IPMI Event Logging. When this function is set to Disabled, the system will continue to log events received via system interface. The options are **Enabled** and Disabled.

Clear System Event Logging

Enable this function to force the BIOS to clear the system event logs during the next cold boot. The options are Enabled and **Disabled**.

Existing Event Log Number

This item displays the number of the existing event log.

Event Log Control

System Firmware Progress

Enable this function to log POST progress. The options are Enabled and **Disabled**.

BIOS POST Errors

Enable this function to log POST errors. The options are **Enabled** and Disabled.

OS Boot Watch Dog

Set to Enabled to enable OS Boot Watch Dog. The options are Enabled and **Disabled**.

Timer for Loading OS (Minutes)

This feature allows the user to set the time value (in minutes) for the previous item: OS Boot Watch Dog by keying-in a desired number in the blank. The default setting is 10 (minutes.) (Please ignore this option when OS Boot Watch Dog is set to "Disabled".)

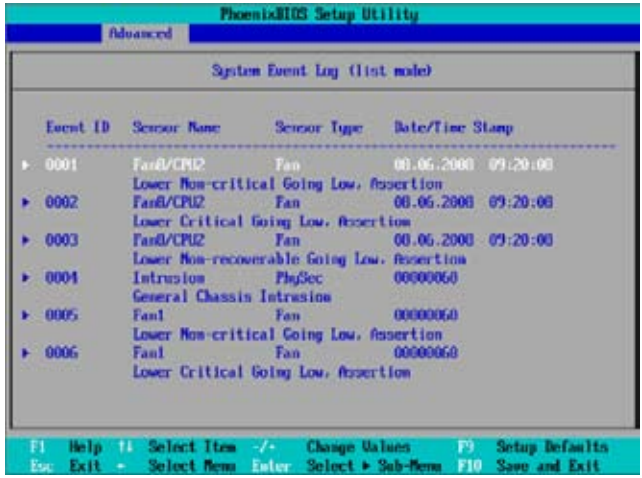
Time Out Option

This item allows the user to decide what action to take in an event of a system boot failure. The options are **No Action**, Reset, Power Off and Power Cycles.

▶System Event Log/System Event Log (List Mode) (X7SB3-F only)

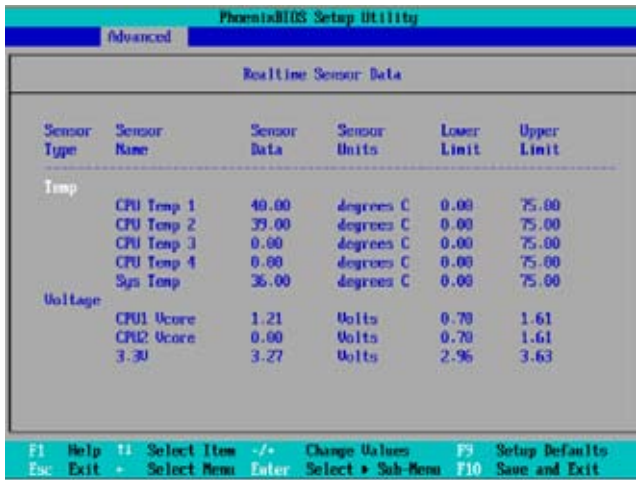
These items display the System Event (SEL) Log and System Event (SEL) Log in the List Mode. Items include: SEL (System Event Log) Entry Number, SEL Record ID, SEL Record Type, Time Stamp, Generator ID, SEL Message Revision, Sensor Type, Sensor Number, SEL Event Type, Event Description, and SEL Event Data.

Advanced
System Event Log
SEL Entry Number = 1
SEL Record ID = 0001
SEL Record Type = 02 - System Event Record
Timestamp = 08.06.2008 09:20:08
Generator Id = 40 00
SEL Message Rev = 04
Sensor Type = 04 - Fan
Sensor Number = 15 - FanA/CPU
SEL Event Type = 01 - Threshold
Event Description = Lower Non-critical Going Low, Assertion
SEL Event Data = 50 00 04
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ← → Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit


PhoenixBIOS Setup Utility
Advanced
System Event Log (list mode)
Event ID Sensor Name Sensor Type Date/Time Stamp
0001 Fan0/CPU2 Fan 00.06.2000 09:20:00
Lower Non-critical Going Low, Assertion
0002 Fan0/CPU2 Fan 00.06.2000 09:20:00
Lower Critical Going Low, Assertion
0003 Fan0/CPU2 Fan 00.06.2000 09:20:00
Lower Non-recoverable Going Low, Assertion
0004 Intrusion PhySec 00000060
General Chassis Intrusion
0005 Fan1 Fan 00000060
Lower Non-critical Going Low, Assertion
0006 Fan1 Fan 00000060
Lower Critical Going Low, Assertion
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

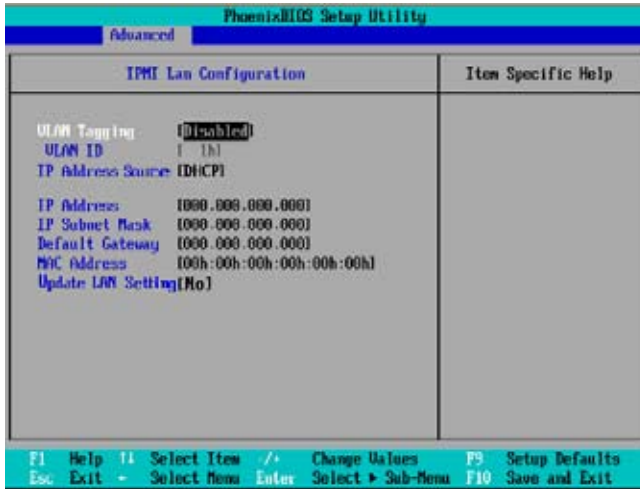
▶Realtime Sensor Data (X7SB3-F only)

This feature display information from motherboard sensors, such as temperatures, fan speeds and voltages of various components.


PhoenixBIOS Setup Utility
Advanced
Realtime Sensor Data
Sensor Type Sensor Name Sensor Data Sensor Units Lower Limit Upper Limit
Temp
CPU Temp 1 40.00 degrees C 0.00 75.00
CPU Temp 2 39.00 degrees C 0.00 75.00
CPU Temp 3 0.00 degrees C 0.00 75.00
CPU Temp 4 0.00 degrees C 0.00 75.00
Sys Temp 36.00 degrees C 0.00 75.00
Voltage
CPU1 Vcore 1.21 Volts 0.70 1.61
CPU2 Vcore 0.00 Volts 0.70 1.61
3.3V 3.27 Volts 2.96 3.63
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

▶IPMI LAN Configuration (X7SB3-F only)

The following features allow the user to configure and monitor IPMI LAN settings.


PhoenixBIOS Setup Utility
Advanced
IPMI Lan Configuration
Item Specific Help
VLAN Tagging [Disabled]
VLAN ID 1 [1]
IP Address Source [DHCP]
IP Address [000.000.000.000]
IP Subnet Mask [000.000.000.000]
Default Gateway [000.000.000.000]
MAC Address [00h:00h:00h:00h:00h:00h]
Update LAN Setting[No]
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

VLAN Tagging

Select Enabled to enable Virtual LAN(s) for IPMI connections and allow the user to configure VLAN settings. The options are Enabled and **Disabled**.

VLAN ID

If VLAN Tagging above is set to Enabled, this item allows the user to change the VLAN ID. If VLAN Tagging is disabled, this item will be ignored by the firmware.

IP Address Source

This item allows the user to select the IP address source for the connection. The options are **DHCP** and Static.

This item displays the IP address for the IPMI connection detected.

IP Subnet Mask

This item displays the IP Subnet Mask for the IPMI connection detected.

Default Gateway

This item displays the Default Gateway for the IPMI connection detected.

MAC Address

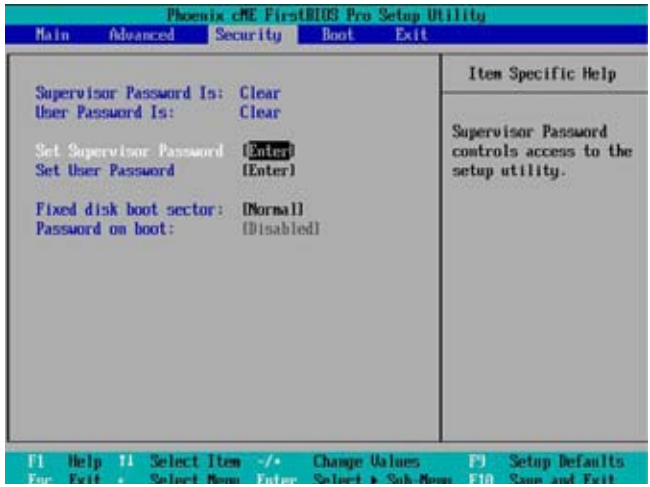
This item displays the MAC Address for the IPMI connection detected.

Update LAN Settings

Select Yes to allow BIOS update LAN setting. The options are Yes and **No**.

4-5 Security Settings

Choose the Security menu from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. Security setting options are displayed by highlighting the setting using the arrow keys and pressing <Enter>. All Security BIOS settings are described in this section.



Supervisor Password Is:

This item indicates if a supervisor password has been entered for the system. Clear means such a password has not been used and Set means a supervisor password has been entered for the system.

User Password Is:

This item indicates if a user password has been entered for the system. Clear means such a password has not been used and Set means a user password has been entered for the system.

Set Supervisor Password

When the item Set Supervisor Password is highlighted, hit the <Enter> key. When prompted, type the Supervisor's password in the dialogue box to set or to change supervisor's password, which allows access to the BIOS.

Set User Password

When the item Set User Password is highlighted, hit the <Enter> key. When prompted, type the user's password in the dialogue box to set or to change the user's password, which allows access to the system at boot-up.

Fixed Disk Boot Sector

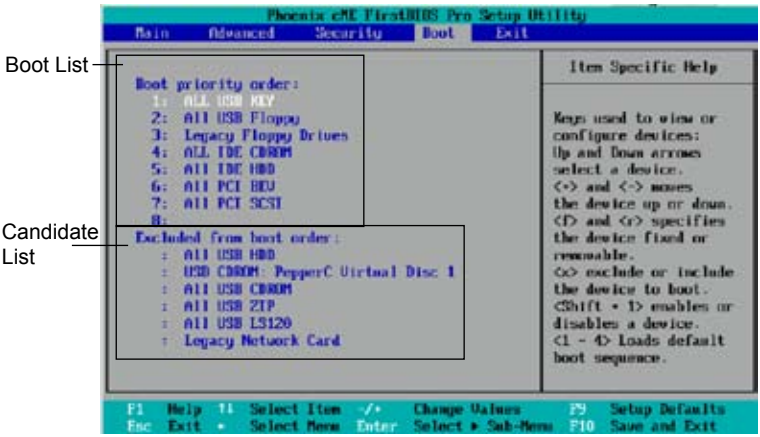
Select **Normal** to enable Write-Protect the boot sector on the hard drives to protect against viruses.

Password on Boot

This setting allows you to require a password to be entered when the system boots up. The options are Enabled (password required) and Disabled (password not required).

4-6 Boot Settings

Choose Boot from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. See details on how to change the order and specs of boot devices in the Item Specific Help window. All Boot BIOS settings are described in this section.

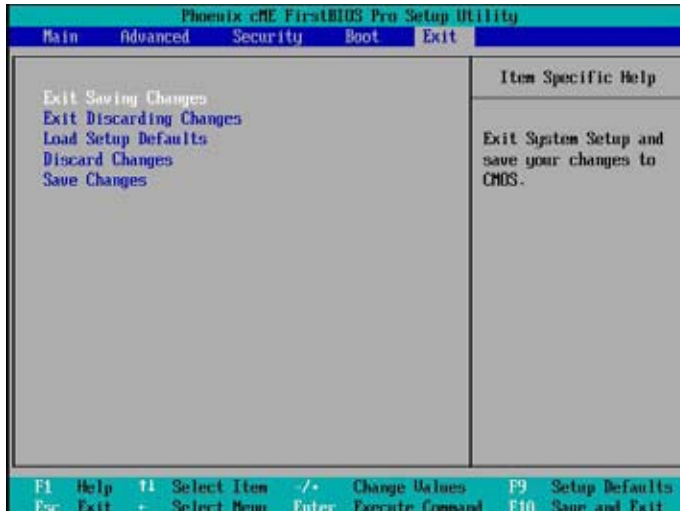

Boot List
Candidate List
Phoenix cME FirstBIOS Pro Setup Utility
Main
Advanced
Security
Boot
Exit
Boot priority order:
1: ALL USB KEY
2: All USB Floppy
3: Legacy Floppy Drives
4: ALL IDE CDROM
5: All IDE HDD
6: All PCI BEV
7: All PCI SCSI
8:
Excluded from boot order:
: All USB HDD
: USB CDROM: PepperC Virtual Disc 1
: All USB CDROM
: All USB ZIP
: All USB LS120
: Legacy Network Card
Item Specific Help
Keys used to view or configure devices:
Up and Down arrows select a device.
<+> and <-> moves the device up or down.
<f> and <r> specifies the device fixed or removable.
<x> exclude or include the device to boot.
<Shift + 1> enables or disables a device.
<1 - 4> Loads default boot sequence.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

Boot Priority Order/Excluded from Boot Orders

The devices included in the boot list section (above) are bootable devices listed in the sequence of boot order as specified. The boot functions for the devices included in the candidate list (above) are currently disabled. Use a <+> key or a <-> key to move the device up or down. Use the <f> key or the <r> key to specify the type of an USB device, either fixed or removable. You can select one item from the boot list and hit the <x> key to remove it from the list of bootable devices (to make its resource available for other bootable devices). Subsequently, you can select an item from the candidate list and hit the <x> key to remove it from the candidate list and put it in the boot list. This item will then become a bootable device. See details on how to change the priority of boot order of devices in the Item Specific Help window.

4-7 Exit

Choose Exit from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. All Exit BIOS settings are described in this section.



Exit Saving Changes

Highlight this item and hit <Enter> to save any changes you may have made and to exit the BIOS Setup utility.

Exit Discarding Changes

Highlight this item and hit <Enter> to exit the BIOS Setup utility without saving any changes you may have made.

Load Setup Defaults

Highlight this item and hit <Enter> to load the default settings for all items in the BIOS Setup. These are the safest settings to use.

Discard Changes

Highlight this item and hit <Enter> to discard (cancel) any changes you have made. You will remain in the Setup utility.

Save Changes

Highlight this item and hit <Enter> to save any changes you have made. You will remain in the Setup utility.

Notes

Appendix A

BIOS POST Error Codes

This section lists Recoverable POST (Power On Self Test) Error codes for the Phoenix BIOS.

Recoverable POST Errors

When a recoverable type of error occurs during POST, the BIOS will display a POST code that describes the problem. BIOS may also issue one of the following beep codes:

1 long and two short beeps - video configuration error

1 repetitive long beep - no memory detected

1 continuous beep w/Front Panel Overheat LED On - System Overheat

Notes

Appendix B

Installing the Windows OS

After all the hardware has been installed, you must first configure Software RAID settings before you install the OS and other software drivers. To install the Linux OS or to configure Software RAID settings, please refer to the OS Installation or RAID Configuration User Guides posted on our web site at www.supermicro.com/support/manuals.

Installing the Windows XP/2000/2003 OS

1. Insert Microsoft's Windows XP/2000/2003 Setup CD in the CD Driver, and the system will start booting up from CD.

2. Continue with the OS installation. The Windows OS Setup screen will display.

3. From the Windows XP/2000/2003 Setup screen, press the <Enter> key. The XP/2000/2003 Setup will automatically load all device files and then continue with the Windows XP/2000/2003 installation.

4. After the Windows XP/2000/2003 OS Installation is completed, the system will automatically reboot.

5. Insert the Supermicro Setup CD that came with your motherboard into the CD Drive during system boot, and the main screen will display.

Notes

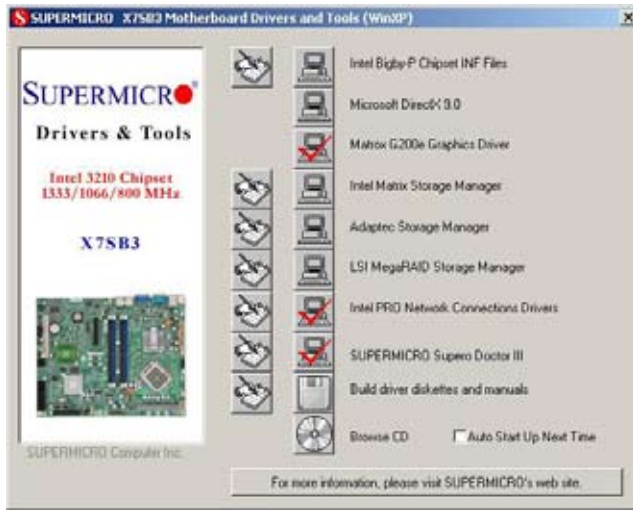
Appendix C

Installing Other Software Programs and Drivers

C-1 Installing Other Drivers

After you've installed the Windows Operating System, a screen as shown below will appear. You are ready to install software programs and drivers that have not yet been installed. To install these software programs and drivers, click the icons to the right of these items.

Driver/Tool Installation Display Screen



Note:

Click the icons showing a hand writing on the paper to view the readme files for each item. Click a computer icon on the right of an item to install an item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before proceeding with the next item on the list.**

C-2 Configuring Supero Doctor III

The Supero Doctor III program is a Web-based management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called the SD III Client. The Supero Doctor III program included on the CDROM that came with your motherboard allows you to monitor the environment and operations of your system. Supero Doctor III displays crucial system information such as CPU temperatures, system voltages and fan status. See the Figure below for a display of the Supero Doctor III interface.

Note 1: Both default username and password are **ADMIN**.

Note 2: In the Windows OS environment, the Supero Doctor III settings take precedence over the BIOS settings. When first installed, Supero Doctor III adopts the temperature threshold settings previously set in the BIOS. Any subsequent changes to these thresholds must be made within Supero Doctor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in the BIOS.

Supero Doctor III Interface Display Screen-I (Health Information)

Supero Doctor III Interface Display Screen-II (Remote Control)

Note: SD III Software can be downloaded from our Web site at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download SDIII User's Guide at: http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf. For the Linux OS, we will still recommend that you use Supero Doctor II.

Notes

(Disclaimer Continued)

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